THE UNIVERSITY *of* EDINBURGH
Annual Review 2009/2010
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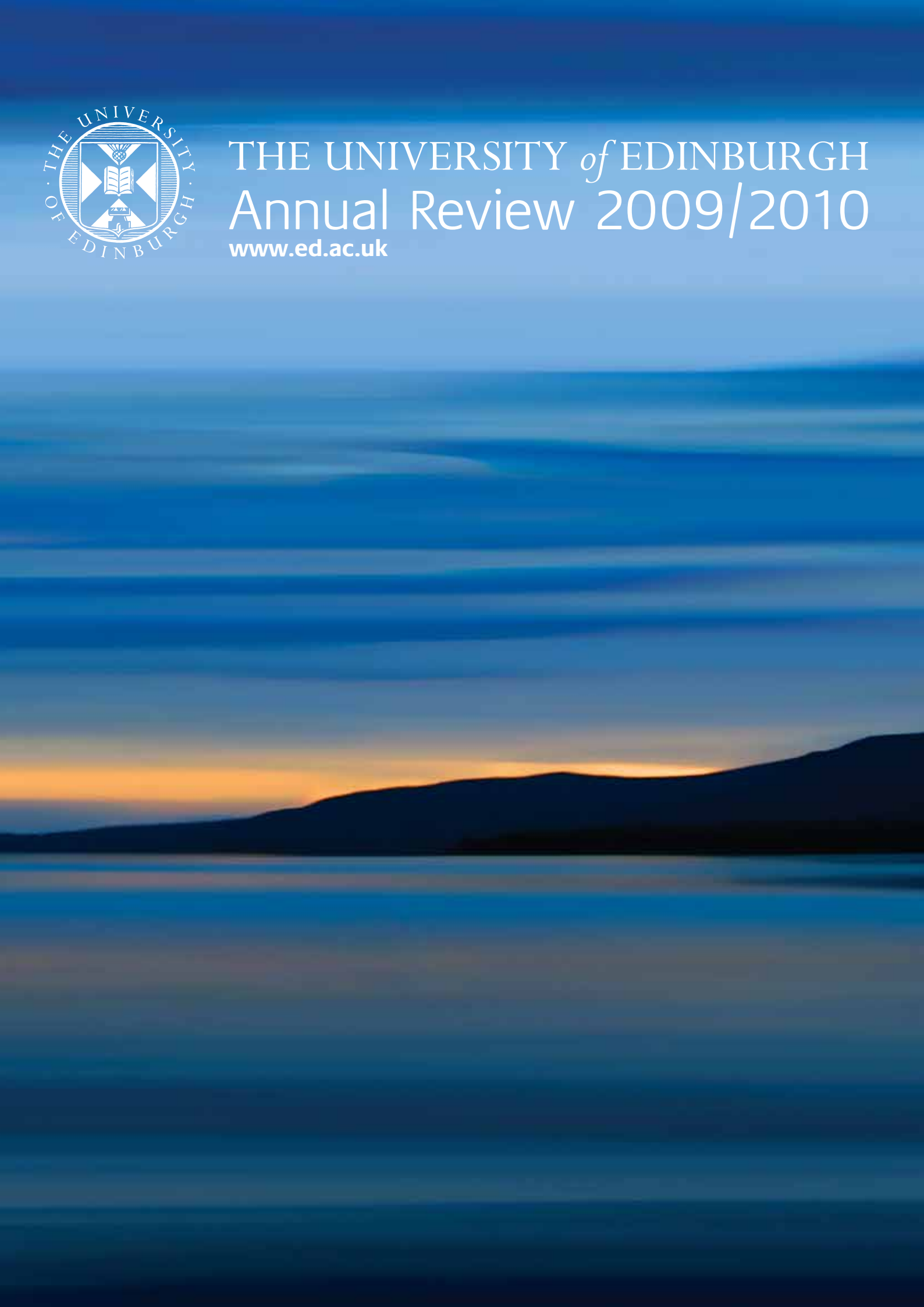


“ Institutions like ours can make their greatest contribution to the wider world by carrying out research of international standing, the results of which truly have the potential to transform lives...”

Professor Sir Timothy O’Shea, Principal and Vice Chancellor, the University of Edinburgh

The University is committed to maintaining a sustainable environment, wherever our research takes place across the world. Scotland, particularly suited to carbon storage, has the potential to host a large carbon capture, storage and management industry. The University is leading the way in equipping graduates with the relevant skills and expertise to safeguard this enterprise.

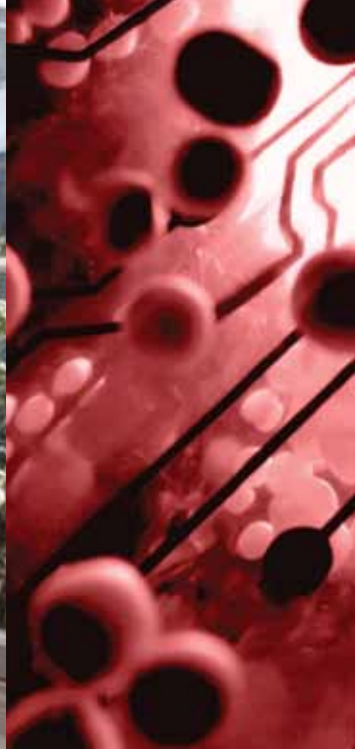
Cover courtsey of Bluefinart 2009

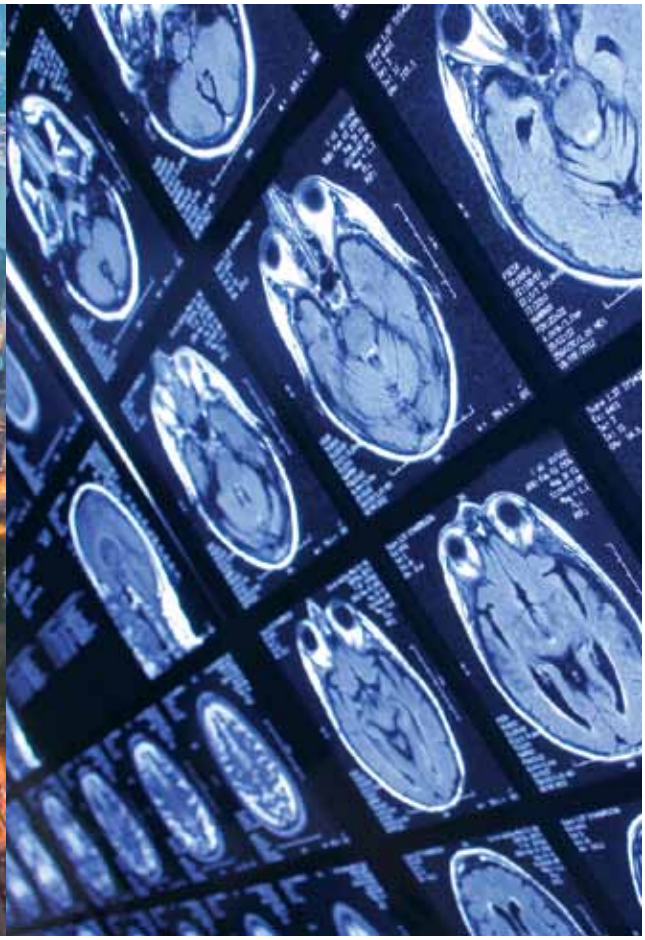











Contents

To find out more about some of these exciting projects please visit **www.ed.ac.uk/annualreview** to watch our companion Annual Review video.

The University's Old College dome, viewed from the roof of the National Museum of Scotland.

Our vision

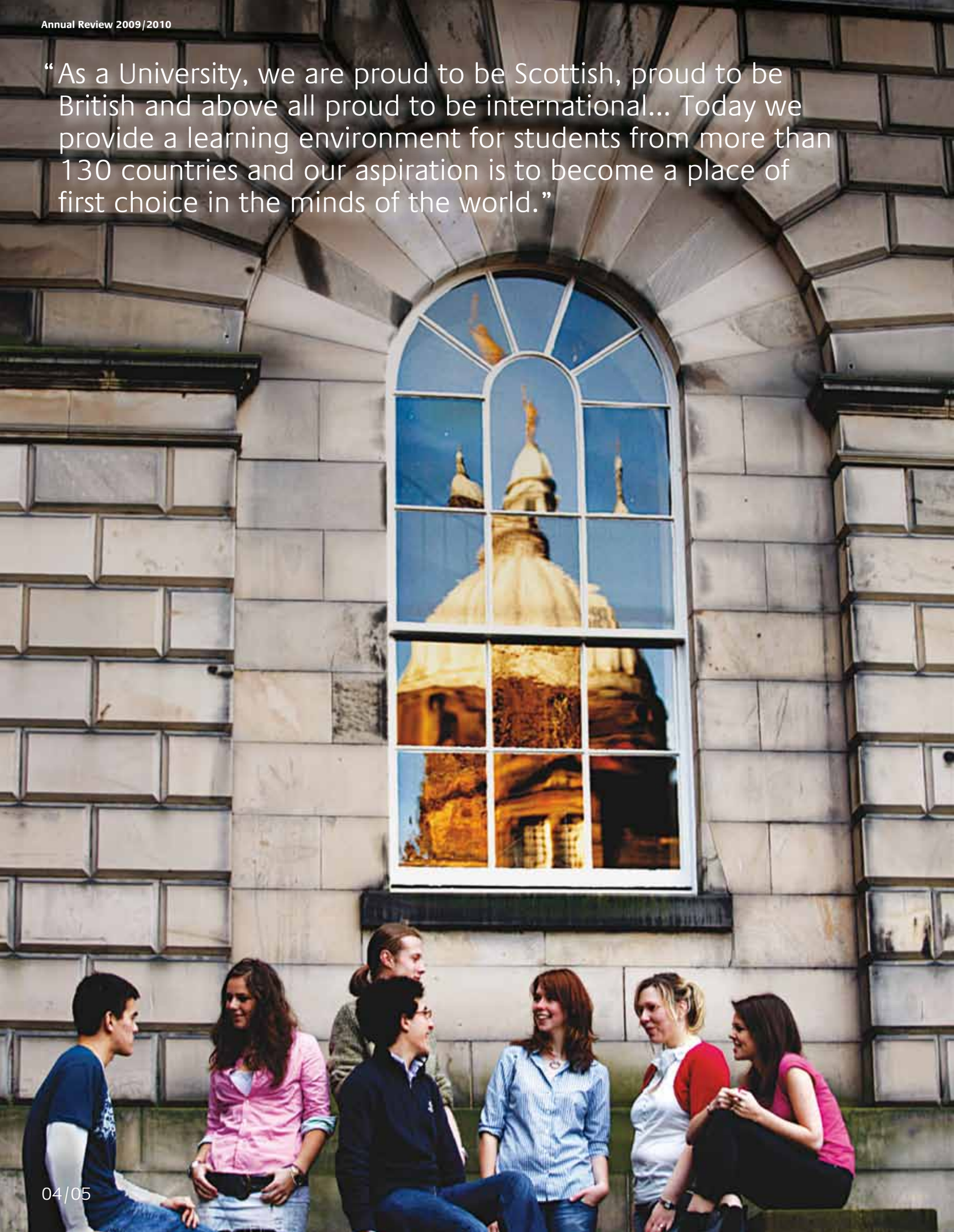
To shape the future by attracting and developing the world's most promising students and outstanding staff.

Our mission

The mission of our University is the creation, dissemination and curation of knowledge. As a world-leading centre of academic excellence we aim to:

- enhance our position as one of the world's leading research and teaching universities and to measure our performance against the highest international standards
- provide the highest quality learning and teaching environment for the greater wellbeing of our students and to deliver an outstanding educational portfolio
- produce graduates fully equipped to achieve the highest personal and professional standards
- make a significant, sustainable and socially responsible contribution to Scotland, the UK and the world, promoting health and economic and cultural wellbeing.

"As a University, we are proud to be Scottish, proud to be British and above all proud to be international... Today we provide a learning environment for students from more than 130 countries and our aspiration is to become a place of first choice in the minds of the world."



Principal's foreword

The so-called 'global village' in which we live is going through challenging times – and challenging times make extra demands on us all. Perhaps key among these is the demand for invention and innovation.

It is in this area where institutions like ours can make their greatest contribution to the wider world – by carrying out research of international standing, the results of which truly have the potential to transform people's lives, and by producing students with inquiring minds whose ideas and enthusiasm allow them to go on and help shape the future.

These are bold ambitions and assertions – but I am proud to say that at the University of Edinburgh they do not ring hollow. It is immensely gratifying to look over the articles for this year's *Annual Review* and see the evidence of what we do and the contribution we make across all fields.

In this year's edition you will find just a snapshot of some of the work in which we're involved – not only in terms of our core activities of research and teaching but also in terms of our economic impact and our engagement with the wider communities we serve.

One of the great success stories featured in this year's publication is our pioneering Carbon Capture and Storage (CCS) MSc run by the School of GeoSciences in conjunction with the Business School. This is a case study in understanding the requirements of prospective students and helping to produce graduates who are in turn equipped to make vital contributions to the global efforts to address climate change.

Elsewhere in the this publication, you can read about the research findings that could lead to the development of new treatments for breast cancer and, also in the field of medicine, we feature our new imaging centre that will deliver improved treatment and diagnosis for diseases ranging from heart disease to schizophrenia.

Other colleagues featured as they push back the boundaries are volcanologist Thor Thordarson – who is helping us to develop a better understanding of natural hazards like volcanoes – and the team behind the Skoog, a wonderful creation which is bringing music to children who are unable to use traditional instruments.

As a University, we are proud to be Scottish, proud to be British and above all proud to be international. Historically we have always been able to attract some of the most gifted students and staff from around the world.

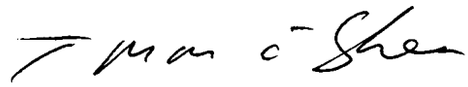
Today we provide a learning environment for students from more than 130 countries and our aspiration is to become a place of first choice in the minds of the world. We have a strong desire to be a force for good internationally and to that end have established two Global Academies – collaborative networks of academics aimed at developing innovative solutions to global health and development problems. As part of our international activity we continue to forge strong links with China, the USA, India and other nations – as demonstrated in the launch of our new centre dedicated to the promotion and understanding of Russian language and culture, the Princess Dashkova Centre, which you can read more about in this year's publication.

We are a broad church and as such we are about more than promoting excellence in teaching and research. The economic impact that we make is extremely important and I have been hugely impressed by the success of our commercialisation activity. Turning our research innovation into a range of successful business ventures is an increasingly important element of what we do, particularly in the current economic climate. Similarly our relationships with the wider community and our contribution to the cultural life of our city are just as important. That is why in this latest edition of the *Annual Review* we focus on the record number of new companies we have formed in our 40th year of commercialisation and also take a look at the part we play in making the Scottish capital such a vibrant and creative place in which to live and work.

Finally, I would like to mention Professor Robert Edwards, Edinburgh graduate, IVF pioneer and the most recent winner of the Nobel Prize in Physiology or Medicine. Professor Edwards began research into IVF when he was a student at the University's Institute of Animal Genetics – now integrated into the School of Biological Sciences. He became fascinated with the reproduction of mice and other animals – laying the foundations for his future work on IVF. He completed his PhD at Edinburgh in 1955.

Of his time here, he is quoted as saying: "Edinburgh is where it all started – everything was in my head, but not on paper, by the time I left."

His comments are testament to the creative crucible that is our university and an inspirational example to today's staff and students who are making it their goal to change people's lives for the better.



Professor Sir Timothy O'Shea BSc, PhD, FRSE

Edinburgh masters carbon: finding solutions to environmental challenges

Dr David Reay

The first cohort of the University of Edinburgh's groundbreaking Carbon Capture and Storage (CCS) MSc celebrated its graduation in 2009. The brainchild of Professor Stuart Haszeldine of the School of GeoSciences, the programme examines ways of capturing and storing carbon dioxide produced from the burning of fossil fuels.

Edinburgh is the first institution in the world to offer training in this type of endeavour and Professor Haszeldine believes that developing a CCS industry in the UK will capitalise on the country's offshore and engineering expertise and make a significant contribution to the economy of the UK.

Research has shown that, due to Scotland's extensive capabilities in capturing and storing carbon dioxide below ground – due to its abundance of porous rock – it would make a prime host and technology centre for the disposal of CO^2, the creation of which would bring the potential for large scale employment opportunities.

The success of the inaugural CCS MSc quickly attracted worldwide attention. Addressing a conference in Bangalore, India, in July 2010, Prime Minister David Cameron recognised the University's work in the field, stating: "In Britain we do have one big advantage that we hope to take and then share with others… which is the technology of carbon capture and storage… developed through some of our best universities, like Edinburgh."

The programme recruited 12 students in its first year and 16 in its second, and Professor Haszeldine anticipates that by 2012 it will be attracting 30 students a year. "Now we're up and running we're developing a track record and here in this Scottish CCS group we've deliberately created lots of contacts with industry – the power industry, the engineering industry and the oil industry – which not only acts as a badge of respectability but also enables us to offer the degree to a wider range of students through bursaries," he says.

Access to industry also provides formidable job opportunities, maintains MSc student Philip Cherukara, who came to Edinburgh from India to undertake the programme. "I want to return to India eventually but I do not envisage employment being hard to find anywhere," he says. "Networking opportunities abound within this course, with contacts in Europe, the US, Australia, China and Canada."

Fellow student, Ben Robbins, was drawn to the MSc for other reasons: "I knew that this department was full of world-renowned researchers, all leaders in their fields, but more importantly, this is the first ever masters in CCS, in one of the most prestigious earth sciences departments in the world."

Complementing Edinburgh's CCS MSc is the Carbon Management MSc, run by Dr Dave Reay of the School of GeoSciences, in conjunction with the University of Edinburgh Business School.

The programme, now in its third year, trains participants to become 'carbon masters', equipping them for careers in carbon and climate change management, and crosses paths with the CCS MSc. Modules on both programmes overlap, further enhancing students' job prospects. Professor Haszeldine says: "It's an economy of sharing and that's the Edinburgh philosophy – students in the room at any one time can be drawn from several different programmes."

Like its CCS counterpart, the Carbon Management MSc breaks new ground, bringing together the economics, business and science of climate change and, as such, attracts students from all over the world. In its first two years the student body represented more than 20 nationalities.

Dr Reay is working with the University's online distance learning team, videoing lectures and devising an online course. "We have three or four applications for every place we award," says Dr Reay. "We are limited to only 50 students a year but to meet the demands of industry and government we need thousands of people with this expertise. The demand for the course far outweighs what we can currently offer but we're looking to address that."

Dr Reay admits that launching a specialised programme during a global financial crisis did not come without risk, however any concerns he may have had about graduate employment have been proven unfounded.

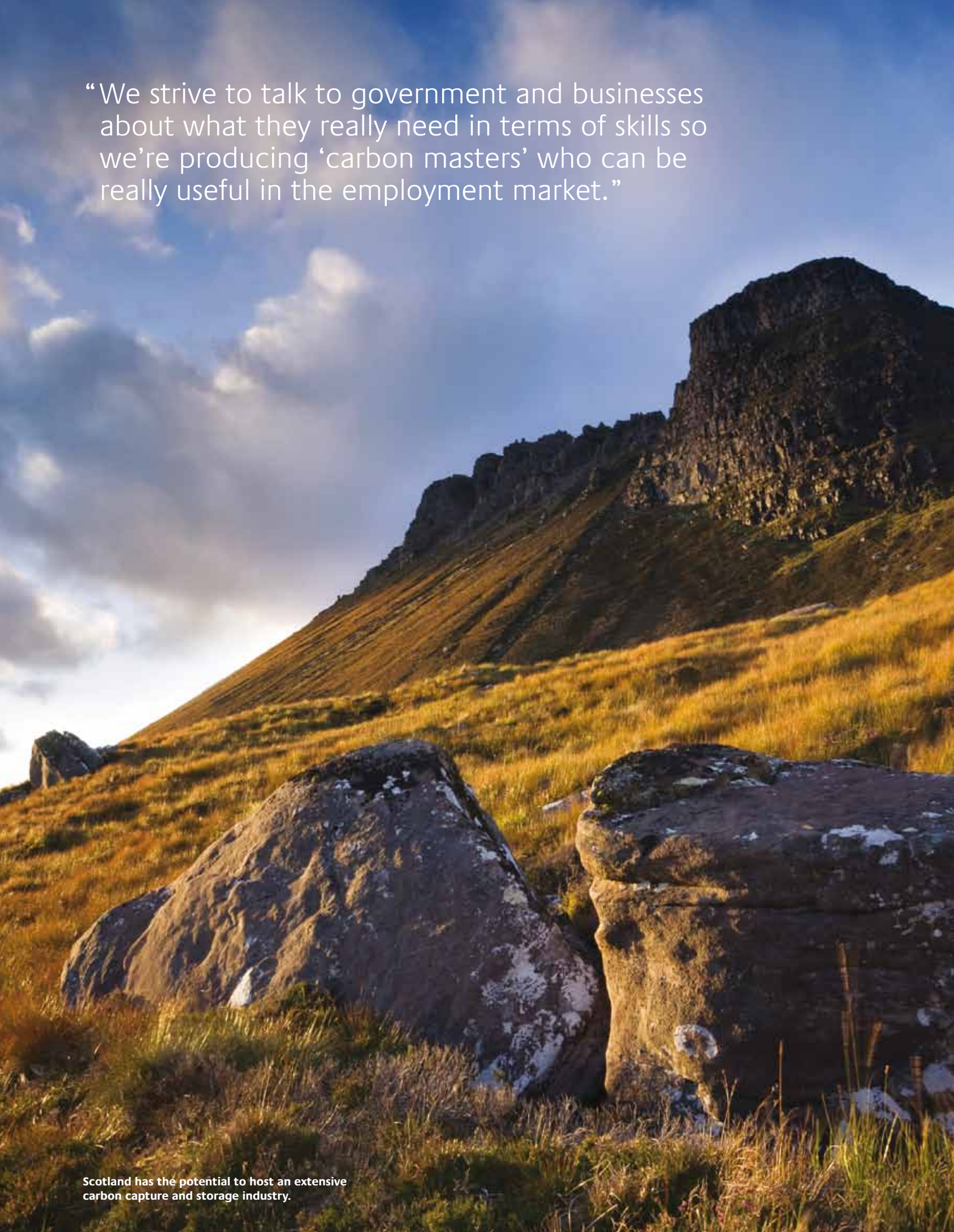
Alumni maintain close links with the University and many have gone on to form their own companies. Hannah Findlay, a graduate of the Carbon Management MSc, now operates her own London-based business, which converts waste into energy through anaerobic digestion. Of her success, Dr Reay says: "Hannah regularly returns to Edinburgh to teach and is able to talk to the students about the reality of creating a £5 million business, how to get investment, the politics involved and how to work with the system."

Fellow alumnus Kevin Houston broke from a 30-year management career to complete the Carbon Management MSc. He now runs his own consultancy company, advising businesses on reducing their carbon emissions to meet ongoing legislation. "I became interested in climate change in 2006 after I watched Al Gore's *An Inconvenient Truth*, which had a profound effect on me," he reflects. "But it wasn't until 2008, after reading a *Sunday Times* article about the carbon management course at Edinburgh, and emailing Dr Reay, that I quit my job and came here."

Mr Houston's decision to form his consultancy company was made after attending a fellow student's 21st birthday party. "I was looking around the room and I thought, 'Wow, you've got these kids from all corners of the globe with a real passion to do something about this issue, and they've all come to Edinburgh to get the skills they need and then they're going to dissipate all over the world: it's an instant network to set up a global organisation.' The idea for my company came out of a conversation at that party."

It is the enthusiasm, commitment and drive, demonstrated by students past and present that reaffirms for Dr Reay and his colleagues that Edinburgh will continue to lead the way in this field. Indeed, passion plays a big part in Dr Reay's selection policy. "The common thread all the students have," he states, "apart from excelling academically, is a passion for the subject."

"We strive to talk to government and businesses about what they really need in terms of skills so we're producing 'carbon masters' who can be really useful in the employment market."



Scotland has the potential to host an extensive carbon capture and storage industry.

The gene breakthrough: University cancer research has life-saving potential

Professor David Harrison

A team of scientists at the University of Edinburgh's Breakthrough Breast Cancer Unit has identified a gene that may cause breast cancer to spread around the body.

The research findings, published in the July 2010 edition of the *British Journal of Cancer*, could lead to the development of new treatments for one of the most common forms of breast cancer that affects 9,000 women in the UK each year.

The expert team is the first to identify the role of the gene C35 in aiding the spread of HER2-positive breast cancer to other parts of the body. It is thought this gene contributes to cancer cells breaking off from the main tumour and dispersing.

The research was led by David Harrison, University of Edinburgh Professor of Pathology and Director of the Breakthrough Breast Cancer Research Unit at Edinburgh's Western General Hospital.

"This is an important early development because we think this is one of the key triggers to the spread of this type of cancer," he says. "It's exciting to know there's a drug out there that could potentially stop this process happening and save the lives of women with breast cancer. We now need to do more work in the lab to prove this concept before patient trials can begin."

Central to the research was applying existing knowledge about how HER2-positive breast cancer – one of the more aggressive forms of the disease – is treated by the drug Herceptin. As Professor Harrison explains: "We investigated a gene that had similarities to genes that are involved with the immune system. Their functions in the immune system are such that we thought it likely that they would have some kind of effect on cancer cells. When we looked at that gene we realised it was actually very close on the genome to HER2, which is a gene that we know is implicated with a number of women with breast cancer, and the target for the drug Herceptin. So it was a process of putting together a lot of the existing literature and data and drawing a conclusion."

Although encouraged by the findings, Professor Harrison believes it is important to view them in the wider context of research undertaken at the unit. The work of the team is defined by a holistic approach.

"Instead of coming to it simplistically, what we're trying to do is ask: what makes the biology of the cancer work?" he says. "You're not necessarily looking at a single way of interrupting the cancer, you're actually looking at providing a network of multiple responses to it. It's about trying to deconstruct the complexity of the biology so you can then rationally begin to identify different elements that might be worth targeting, and realising that focusing on them together might be more effective than targeting one element on its own. That's the challenge."

It was this thinking that informed the research paper about the role of the C35 gene – and it's an approach that Professor Harrison hopes will influence future research to bring benefits to patients.

"I think the concept is gathering support because it makes sense," he comments. "We know that cancer drugs work in a proportion of patients, but they tend to have toxic effects as well. How much better if you could say this is what's likely to work, based on a rational understanding of what makes that patient's cancer grow?"

Though optimistic about the process of translating research findings into treatment for patients, Professor Harrison is also realistic about the particular challenges cancer can present to scientists: "A lot of things work but some cancers are a real problem. People are still dying young and people are still dying when they've got young children, and every one of those cases is a tragedy."

He continues: "My main focus is concentrating on work to understand better what makes those cancers tick so that we can then plan a better way of stopping it in its tracks. What we want to do is understand this disease better, not just in terms of specific drugs but understanding the pathway that leads to it. We need to figure out how we can approach particular cancers by bringing with us the things that we already know about, coupled with new drugs as they come along, and always give the patient the best chance."

At the root of that ambition is a resourceful and talented academic community committed to exchanging ideas. "We're part of a strong network and we have intrinsic links with other groups which share data," Professor Harrison explains. "As well as working with colleagues in Edinburgh we're also collaborating with colleagues in Tokyo, Houston, Moscow and Sydney – they do things that we can't do and without a dialogue with them we wouldn't be able to do our own work.

"The paradox is that you're always in competition in research, but when you collaborate it adds value and is complementary. If we are properly joined up with people who are brilliant scientists and we do make a significant discovery, then ultimately it's going to shortcut how long it takes to get to the clinic stage and be rolled out to patients. So that community of sharing is absolutely critical."

Over a three-decade career, Professor Harrison has witnessed major advances in cancer treatment, but he is passionate and tenacious about what he and his team can achieve in the future.

"We want to better understand how we can move towards individualising a patient's treatment for cancer," he says. "That partly means getting drugs that work but it also means looking at what we already have in existence and how we use it. Cancer treatment has moved on so much since I was first a houseman in medicine 26 years ago. The survival rate of breast cancer has doubled in that time, and that's phenomenal.

"This particular research reflects our attempt to complete the circle from patient to laboratory to collaboration and back again – and hopefully, in the fullness of time, it will lead to a new drug."

A charity fundraiser takes part in the Edinburgh MoonWalk, which raises funds for life-saving breast cancer research.

Innovation in challenging times: commercialisation goes from strength to strength

Mr Derek Waddell

For 40 years the University of Edinburgh has been helping its academics and students to transform their innovative ideas into technology and businesses through Edinburgh Research and Innovation (ERI), ERI's commercialisation arm. It is fittingly coincidental that in ERI's 40th year, Edinburgh became the first Scottish university to form a total of 40 new companies.

Grant Wheeler, Head of Company Formation and Incubation at ERI, says there is a culture of enterprise at the University, which has made it possible for ERI to support the formation of more than 200 companies since it began operating in 1969. "There's been a real effort to develop the culture of enterprise within the University," explains Mr Wheeler. "There are a number of ways ERI can help. Mentoring is a big part of the service we offer but we also help with licensing, premises and finance and have access to a great group of external professionals, such as lawyers and accountants."

Although the past financial year has seen unprecedented success for ERI, its achievements over the past 40 years have been well documented. Major success stories to have sprung from the research carried out at the University include Vision Group, the first Scottish university company to be floated on the UK Stock Exchange; Wolfson Microelectronics Ltd, now a global leader in the supply of integrated circuits supporting everyday items such as the iPhone and iPod touch; and MTEM Ltd, which saves the oil industry millions of pounds a year with its revolutionary multitransient electromagnetic survey technology and is the largest spin-out from any Scottish university. But ERI's 40th year proved to be its best so far. Chief Executive Officer Derek Waddell points out: "Forty is a real achievement for the University. We hit 26 the previous year and 26 the year before that, so this was a big step up. There is clearly a capacity to this but there are ways to stretch resources and that's what we've done."

Among the 40 record-breaking companies established at the University in 2009/10 is NGenTec, which was created to help overcome a major hurdle facing the burgeoning renewable-energy industry. The company has developed 'direct drive' technology that replaces heavy and expensive gearboxes in wind turbines. The gearbox is one of the most unreliable parts of a conventional wind turbine, often causing the greatest challenges to repair, particularly in an offshore wind turbine. NGenTec's direct drive electrical generator makes obsolete the gearbox – and therefore a lot of the unreliability – and can be up to 50 per cent lighter, reducing manufacturing and operating costs considerably.

NGenTec founder and Non-Executive Chairman, Derek Shepherd, says: "Our technology has the potential to revolutionise the renewable-energy industry by making wind power cheaper and more reliable, greatly increasing the efficiency of wind turbines for electric companies."

NGenTec grew from a research project of Dr Markus Mueller, Lecturer in Electrical Engineering at the University's Institute for Energy Systems. ERI recognised the project's potential to become commercial. Mr Waddell explains: "We filed for a patent and applied for proof-of-concept funding. Once we secured that we worked very closely with Dr Mueller and his colleagues, and helped them with the whole company formation, legal advice and licensing."

Another of the University's 2010 success stories is Actual Analytics, a behaviour analysis company born out of a three-year research project. Actual Analytics develops automated behaviour analysis software for pharmaceutical companies to aid the development of drugs for disorders such as Alzheimer's disease and Parkinson's disease. James Heward, an Edinburgh graduate in artificial intelligence and now CEO of Actual Analytics, explains: "The original idea came as part of my dissertation working with [co-founder] Dr Douglas Armstrong in the School of Informatics. We then took it further and got a proof-of-concept award from Scottish Enterprise. ERI helped with a lot of mentoring and training and provided financial assistance until we spun out in March 2010."

Neil Campbell, head of the business development arm of Actual Analytics, explains the far-reaching benefits of this technology: "We take a video file of a drug in use, put it into our software and analyse it. It saves all the manual work, making it cheaper and quicker, but also improves the quality of the data and eliminates reliability issues. So we've got better, more consistent data, and can make better-informed decisions, which in turn means that we can get the drugs to market quicker."

ERI's support role is not limited to advising University staff in commercialising their ideas. In the past year almost half the companies formed came through Launch.ed, ERI's business formation initiative for students.

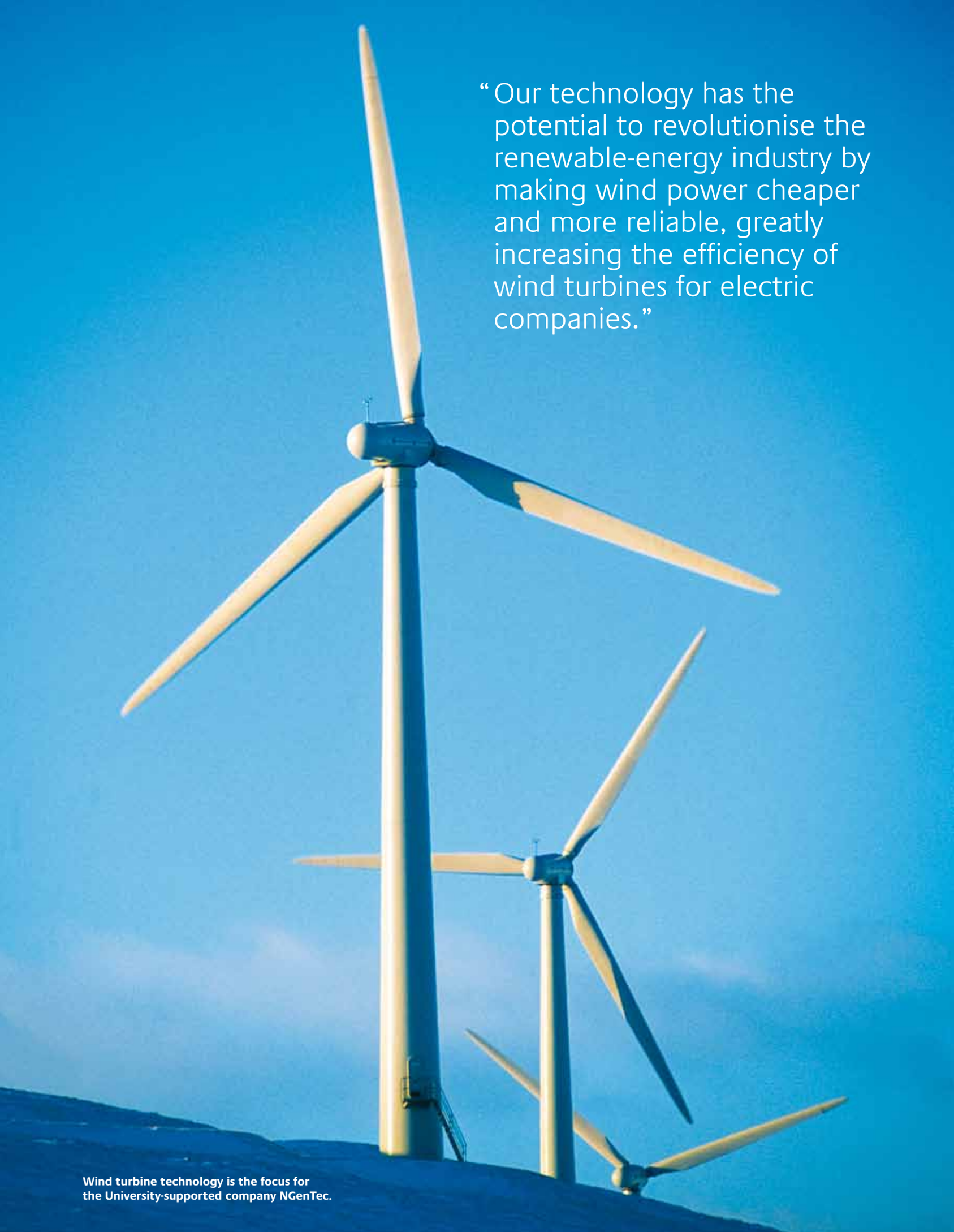
Launch.ed was established specifically for University of Edinburgh students – at any stage in their academic career – to encourage entrepreneurship and provide start-up advice and business support. One undergraduate to take advantage of Launch.ed is Eimear O'Carroll, a second-year physics student and Director of the company Restored Hearing, which has developed a one-minute cure for temporary tinnitus.

Ms O'Carroll explains that the concept for Restored Hearing originated while she was at secondary school: "We were doing a project on how well people can locate sound in different locations and of differing frequencies. It was a basic study of the physics of sound but when we had finished it we wanted to apply the knowledge we had gained to a real problem, which led to our interest in tinnitus and the anatomy and biology of the ear."

Ms O'Carroll and her colleagues discovered that, through aural therapy, they could alleviate temporary tinnitus in just 60 seconds and temporarily alleviate permanent tinnitus, allowing sufferers up to half a day's relief.

On embarking upon her studies at Edinburgh, Ms O'Carroll sought assistance from Launch.ed, which provided her with a mentor who offered practical advice. "Trying to think two or three years down the line was very difficult, so it's been great to have someone to get guidance from," she reflects. "Coming from the 'nice happy world' of academia we had no business experience but Launch.ed helped us overcome that."

As Mr Waddell adds, central to ERI's ethos is to instil in enterprising minds the confidence to take that initial leap of faith. "How do you persuade them to take the first step, which is often the one they have the most difficulty taking? ERI are empowering these people to be entrepreneurial and then their own onus takes over."



"Our technology has the potential to revolutionise the renewable-energy industry by making wind power cheaper and more reliable, greatly increasing the efficiency of wind turbines for electric companies."

Wind turbine technology is the focus for the University-supported company NGenTec.

Capital culture: the University shares its creative space

Ms Lorna Brain

The University of Edinburgh makes a vital contribution to public engagement each year by creating and sharing space with the capital's wider community.

One of the University's most significant contributions to Edinburgh's cultural life is the provision of venues for the Edinburgh Festival Fringe and the Edinburgh International Science Festival to use for shows, workshops and talks. In total almost one million tickets were sold for events held in University buildings during 2010's summer festival period.

Lorna Brain, Festivals Manager at the University of Edinburgh's Festivals Office, believes that the venues, which include the George Square Theatre, Appleton Tower and the Pleasance complex, are a crucial expression of the University's relationship with the public.

"Our involvement in the Fringe and in the Science Festival is a hugely significant part of our public engagement," Ms Brain says. "Because of the venues that are used, the Fringe in some respects is the public face of the University. We can use both festivals as a way of projecting the unique qualities of the University and sharing the resources that we have available here."

The Science Festival, held each May and June, demonstrates the depth of goodwill and expertise from which the University can draw for the purpose of public education. "It's a great example of direct public engagement and the University's contribution is amazing," says Ms Brain. "The academics involved give their time for nothing, they run the workshops and give the talks."

The University's involvement is part of an initiative specifically aimed at inspiring young people about scientific ideas, Ms Brain explains: "*Discover Science with the University of Edinburgh at the National Museum of Scotland* is for pre-secondary school children, around the age of 11 and 12. It's about trying to target those children who might go on to do science at secondary school and then study it at university."

Ms Brain believes the beauty of the University estate is its adaptability: "Theatre companies and performers know we have the potential to accommodate unusual and iconoclastic site-specific events." She highlights the National Theatre of Scotland's acclaimed play *Black Watch*, first performed in 2006, as an example of the University's ability to provide venues that are synonymous with the performance. "The drill hall at Forrest Hill, where *Black Watch* was first performed, is normally used as a car park," she says. "But *Black Watch* was one of the most significant pieces of theatre that's come out of Scotland in a long time. The University was crucial to that because the play was written around the drill hall space."

If the University is to keep involving the public in new ways, venues must be forums for innovation as well as information. That was the thinking behind the creation of Inspace, a public engagement gallery and laboratory housed on the ground floor of the Informatics Forum on Crichton Street. Opened in 2009, Inspace is a partnership between the University and arts agency New Media Scotland, and combines exhibitions, educational events and science activities.

"It was envisaged as an interface between researchers and the broader public," explains Jon Oberlander, Director of Inspace and Professor of Epistemics in the University's School of Informatics. "The aim was to create a highly visible 'shop window' – to equip a lab where we could do research, talk about it and show it off. It's a 'smart space', filled with novel sensors and displays, to let us experiment with ways to make environments more intelligent, and to explore the social and ethical dimensions of this kind of technology."

Professor Oberlander foresees Inspace making a valuable contribution to the intellectual and artistic life of the city. "Inspace is in the city centre, and it's highly accessible and highly visible," he says. "Over the past year, we've run a lot of events, ranging from talks to workshops to concerts to film nights, for a predominantly young adult audience. They've been very well attended, with more than 90 per cent capacity, on average. It's an especially flexible venue so there is a lot of potential.

"We're now pursuing opportunities to develop more daytime activities, and to make the space available for interaction for two hours a day. A good example of this was our 2010 festival exhibition *life.turns.* by Blipfoto. Standing outside, you could call up from your iPhone, custom-made, crowd-sourced movies, projected into the street. It's a different kind of public interactivity from what's available elsewhere in the University and the city."

Professor Oberlander is keen that Inspace builds on its work with local community associations, such as the West Crosscauseway Association, and partner groups within the University, to help them exploit the venue as a facility for dialogue with both the public and policymakers.

Inspace's exhibition for the 2009 Edinburgh Festival showcased a work that embodies the venue's willingness to cross-fertilise ideas about culture and technology. Described by its creators as an "autonomous emotional robot band", Cybraphon was designed and built by experimental art and music collective FOUND. It takes the form of an old wardrobe packed with a mix of retro musical instruments and state-of-the-art electronic components. The FOUND collective includes Professor Simon Kirby and Mr Barry Campbell of the School of Philosophy, Psychology and Language Sciences. Their invention plays around 25 tunes and has a personality. Connected to the internet and constantly seeking out online verdicts on its performance, the machine is a witty, playful and provocative piece of art that comments on our current obsession with celebrity and social media.

Cybraphon won a 2009 BAFTA Scotland award in the interactive category. Professor Kirby feels that a combination of the University's support for the project and the chance to exhibit at Inspace was critical to the way it has charmed audiences.

"There was a real possibility that Cybraphon was going to be broken up and put away, because we needed a room to maintain it and work on other projects," he says. "The University has been fantastic in helping us work with the estate to find the right place to put it.

"Exhibiting it in Inspace undoubtedly opened it up to a new audience. By constructing something like this, you can have a specific dialogue with the community. People who've seen Cybrathon tend to respond to it immediately; they just seem to get the idea. There are important points of connections about ideas of community and culture and the world – and we're in absolutely the right environment to explore those ideas."

A Korean theatre troupe make use of the Old College quad during the summer festival period with a performance of *Binari – Spirit of the Beast*.

Perfect vision: new imaging centre transforms patient experience

Professor Edwin van Beek

The creation of a new University of Edinburgh imaging centre promises to deliver improved diagnosis and treatments for diseases ranging from cancer to schizophrenia.

The work of the state-of-the-art Clinical Research Imaging Centre (CRIC) at the Queen's Medical Research Institute (QMRI) is likely to bring substantial benefits to patients. The £20 million Centre is equipped with the latest technology, including a positron tomography (PET) scanner, used in cancer diagnosis; a high-resolution computed tomography (CT) scanner, for investigation of the heart and coronary arteries; and a magnetic resonance imaging (MRI) scanner, used to research conditions such as psychosis.

Professor Edwin van Beek, Director of the CRIC, says that the idea behind the facility stemmed from an urge to bring together existing expertise and technology under one roof. He explains: "Professor Chris Haslett, the Director of the QMRI, together with David Newby, Professor of Cardiology at the University's Centre for Cardiovascular Science, proposed this idea of bringing together different equipment into one streamlined facility. Integration was the key word."

The CRIC is a collaboration between the University of Edinburgh and NHS Lothian and is backed by financial support from private donations, the European Union, the British Heart Foundation and grants from a range of sources. Professor van Beek believes the quality of its staff and imaging technology will allow the Centre to spearhead research into changes within the body that lead to disease.

"Increasingly, imaging is seen as one way of identifying appropriate treatment for patients more quickly," he says. "Now we can get patients to this imaging research facility and accelerate the process. By combining our resources we can test new hypotheses and use imaging in significant new ways."

Professor van Beek, who is also Scottish Imaging Network: A Platform for Scientific Excellence (SINAPSE) Chair of Clinical Radiology at the University, is passionate about the advantages the Centre's equipment can bring to patient care. He believes the new technology will allow for a more intimate and immediate understanding of potential problems in the organs of the body.

"Our CT scanner is top end and can provide very detailed images extremely quickly," he explains. "You can use it to see a complete heart within a fraction of a heartbeat. Traditionally the heart has been a difficult organ to visualise, but as scanners become faster you can now look at the heart, its blood vessels, and the heart valves.

"We'll also be able to investigate organ function, such as blood perfusion through the lungs, liver and the heart. This should enhance understanding of disease and may help in adjusting treatments earlier, leading to better preservation of organ function."

Complementing the CT scanner, the Centre's MRI scanner is able to render precise images of brain activity at a molecular level, leading to more accurate diagnosis. MRI scans are also used for research into liver and gynaecological diseases and diseases of pregnancy.

However, using this technology is not always about identifying problems or even risk factors. In many cases, it is simply about saving time and offering patients reassurance.

"Using cardiac CT imaging has a direct impact on patient care; it means that a lot of patients don't need to have invasive cardiac catheterisation any more, while other causes for symptoms may be found that can be treated as well," Professor van Beek explains. "Rather than having an intervention the patient can just lie in the scanner. It also provides patients with more insight into what the problem really is and how it could be treated. It may be that they're worried about their heart when in fact there is no problem there, so you can take that worry away."

This preoccupation with the patient's wellbeing extends to the Centre's overall atmosphere, Professor van Beek explains: "It may make a big difference to patients with cancer, who have a lot of stress in their lives, if they have a calm environment. We want to create a sense that people will be looked after and we will try to give them a place where they can have some peace and comfort."

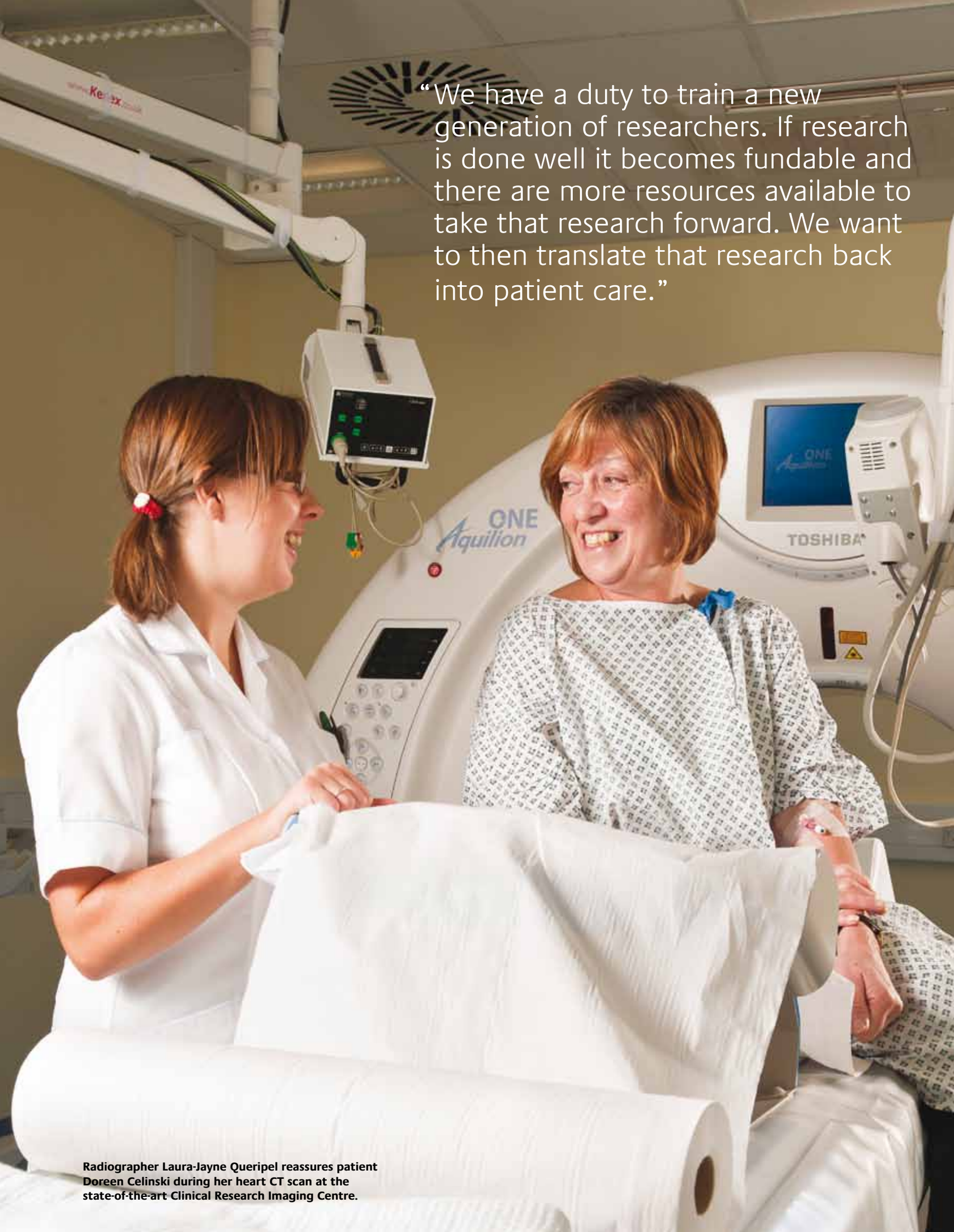
Sharing a set of values about what the Centre should be, and working in partnership with colleagues, is at the core of how the CRIC will function. "Traditionally radiology colleagues were simply asked to do imaging, but now there's very much a collaborative aspect to the work," says Professor van Beek. "Clinicians will come in and say, this is what we'd like to do, can you help us? That collaboration is very important because it's going to give the patient the best results, as imaging has such a huge arsenal of options to chose from."

Professor van Beek is proud of the multidisciplinary ethic that underpins the Centre's work. "What can't be emphasised enough is the sheer breadth of the approach that's been taken here," he says. "We have everything from radiographers to biochemists, technicians, physicists, IT staff, secretaries, support staff and managers. All these people are incredibly valuable – everyone has a sense of ownership."

Work on the CRIC started in November 2008 and was completed in late 2010, however, it is already attracting diverse interest from around the University. "We are getting increasingly involved in medical education, from undergraduate to postgraduate teaching," says Professor van Beek. "We've seen people from Music, Archaeology, Anatomy, Medicine, Psychology, Informatics – the entire gamut of people within the University – who suddenly have the opportunity to come and work with imaging, giving students and other staff a whole new experience and understanding. We are open to anyone who brings new thinking, sees an overlap with their work or wants to test their theories. That's how good ideas are born."

Professor van Beek foresees the Centre making a substantial contribution to the life of the University and the wider community. "That's the pathway we want to be on," he says. "We have a duty to train a new generation of researchers. If research is done well it becomes fundable and there are more resources available to take that research forward. We want to then translate that research back into patient care."

Imaging is not a panacea, he warns, but used well it can enrich academic discourse at the University and transform the experience of patients: "You have to be selective and you have to know how to use it effectively. To get the best results you need the interaction between different imaging experts and other clinicians within the institution. But if you join up that expertise it becomes very powerful."



"We have a duty to train a new generation of researchers. If research is done well it becomes fundable and there are more resources available to take that research forward. We want to then translate that research back into patient care."

Radiographer Laura-Jayne Queripel reassures patient Doreen Celinski during her heart CT scan at the state-of-the-art Clinical Research Imaging Centre.

Reawakening Russian relations: the launch of a new language hub

Dr Lara Ryazanova-Clarke

A new centre dedicated to the advancement of knowledge in Russian language, through research, training and knowledge exchange, opened its doors at the University in 2010.

Based in Buccleuch Place, the Princess Dashkova Centre is rapidly establishing itself at the forefront of Russian study in the UK. The initiative is a partnership between the University and the Russkiy Mir Foundation, which was set up to promote Russian language, culture and dialogue around the world. Drawing on the University's leading expertise in Russian language, the Centre houses an extensive library and has access to two decades worth of Russian television and databases of full-text Russian media.

The Centre's director, Dr Lara Ryazanova-Clarke, Senior Lecturer and Head of Russian at the University, says the new facility is committed to exploring the wide field of Russian studies.

"The central idea is the promotion of Russian language and understanding of Russian culture across the world," explains Dr Ryazanova-Clarke, who is originally from St Petersburg. "The Russkiy Mir Foundation started its work in the post-Soviet countries but recently turned their attention to Britain. They approached us and said they were keen to work with the most prestigious universities in the UK and would like to establish a strong relationship with Edinburgh."

The Centre takes its name from a transformational, iconic and controversial figure in Russian history. Princess Ekaterina Romanovna Dashkova (1743–1810) was a close confidante of Empress Catherine the Great, and led the coup that installed Catherine on the Russian throne in 1762. In 1776 Princess Dashkova came to Edinburgh with her son Pavel, who enrolled at the University. The record of her time in the city unveils a fascinating rapport between the Scottish and Russian Enlightenments.

"When it came to her son's education she had extremely high standards, and she selected this university – out of all the European universities – very carefully," says Dr Ryazanova-Clarke. "She lived in Holyrood Palace for three years while Pavel studied at the University and she was friends with the leading University professors and thinkers of the Scottish Enlightenment, including William Robertson, who was Principal of the University at the time and the personal tutor of her son. She was also a good friend of the philosophers Adam Smith and Adam Ferguson, and was a significant part of the city's Enlightenment network."

After departing the city, Princess Dashkova donated a collection of Russian commemorative medals to the University, a reflection of the profound impact Edinburgh had had on her and her son. Dr Ryazanova-Clarke believes Princess Dashkova's experience of Edinburgh was fundamental to the way she shaped Russian thought when she returned home: "Her contribution to Russian language and culture is extraordinary. When she went back to Russia she became head of the Academy of Sciences and established the Academy of the Russian Language. She launched the first dictionary of the Russian language – running to six volumes – and edited it herself. And she introduced the letter ë to the Russian alphabet."

Princess Dashkova's spell in Edinburgh is part of a tradition of intellectual transaction between the University and Russia. Other notable examples include Edinburgh alumnus Dr Robert Erskine, appointed chief physician to Peter the Great and President of the Medical Chancery in Russia; the creator of the periodic table, Dmitri Mendeleev, made an honorary graduate of the University; and Igor Tamm, winner of the Nobel Prize for Physics in 1958, who studied in Edinburgh before the First World War.

Dr Ryazanova-Clarke believes that the qualities of academic versatility, cultural curiosity and internationalism embodied by figures such as Princess Dashkova should inform the work of the new Centre as it analyses Russia's contribution to the world going forward. "It's important and useful to reinforce the past connections between Scotland and Russia, as well as participate in the exchange of ideas about Russian culture today," she says.

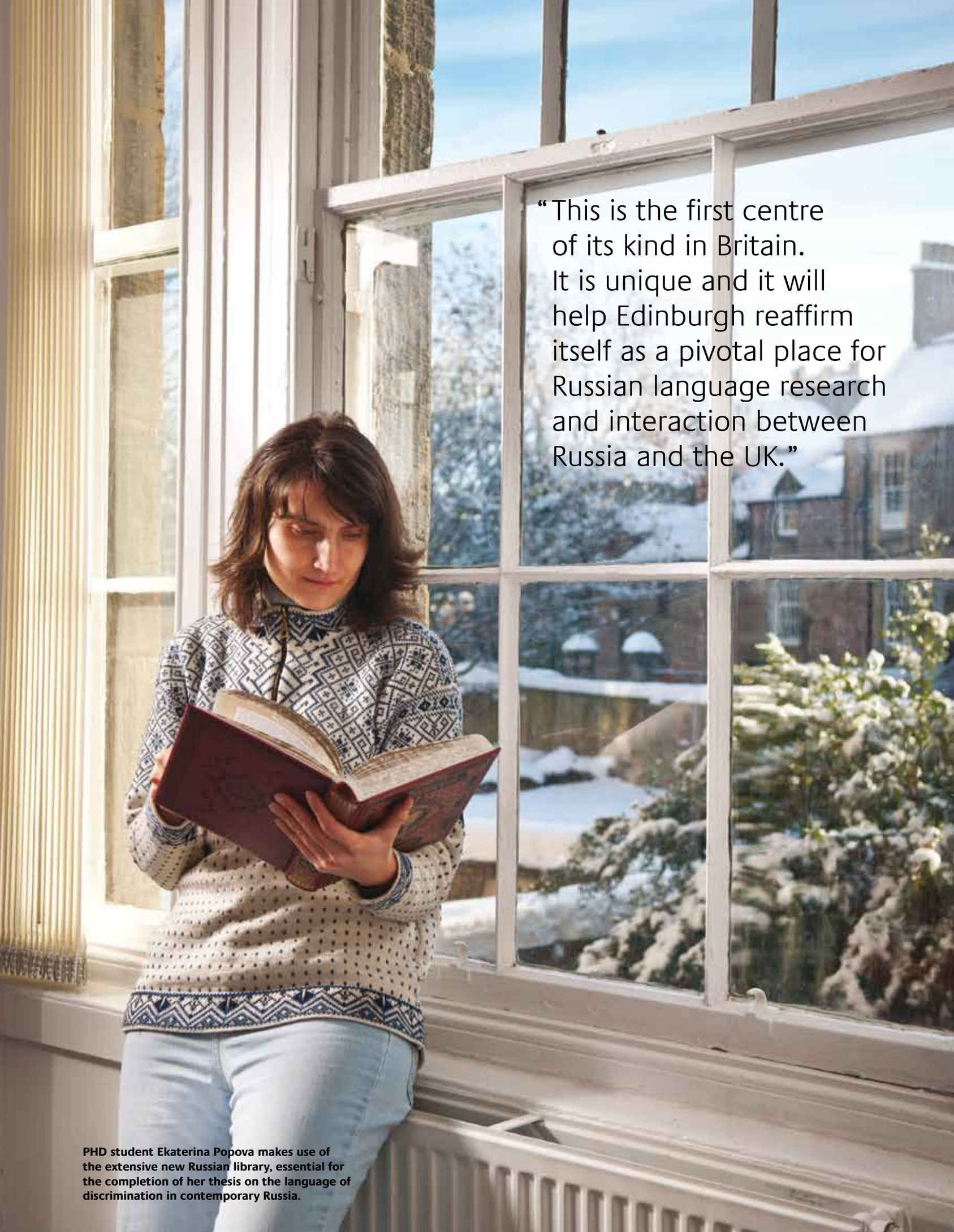
In the wake of the Soviet Union's collapse, Russian language has been internationalised, with some former Soviet countries now negotiating a new identity as part of the European Union. "Russia is still spoken in many places, but this is a cause of controversy and contradiction in many countries that want to establish their own language and nationalising policies," Dr Ryazanova-Clarke explains. "After several waves of immigration there are large Russian communities in Western countries. In Finland for example, Russian is becoming almost as widely spoken as Swedish, and Swedish is an official language of the country. So, are Russians going to influence the language policy of Finland? This is the kind of subject that will be very interesting to discuss."

Dr Ryazanova-Clarke believes that the influence of Russian language and culture in some countries is a source of anxiety. "In Russia they are debating very actively and passionately whether the Soviet ancestry of immigrants to Israel is an important factor in Israeli-Palestinian conflict – and indeed whether this is an issue throughout the global arena."

The impact of the UK's burgeoning Russian-speaking community will also be explored at the Centre. "There is a growing Russian-speaking community in this country," Dr Ryazanova-Clarke acknowledges. "It's important to consider these Russian-speaking environments and the fact that when there is a large enough community Russian schools are being established. The type and quality of education for Russians becomes highly significant. In Edinburgh there is now a Russian school with more than 100 students, while the University is a very popular destination for Russian students choosing to study in the UK, with more than 70 students currently enrolled."

In addition to her role as Director of the Princess Dashkova Centre, Dr Ryazanova-Clarke is also Convener of the Research Unit for the Study of Russian in Context at the University. "The research unit has eight PhD students, and they are our great research strength," she says. In April 2010 she organised a major international conference, *The Russian Language outside the Nation*, which investigated the role Russian has played in countries including the Ukraine, Belarus, Latvia and Central Asia. The conference's success was a sign of the international expertise the Centre can mobilise.

With international postgraduate conferences and a fellowship programme also planned, Dr Ryazanova-Clarke is confident that the Princess Dashkova Centre will deliver its ambition to establish itself as a vital hub for collaboration and learning at the University. "This is the first centre of its kind in Britain," she enthuses. "It is unique and it will help Edinburgh reaffirm itself as a pivotal place for Russian language research and interaction between Russia and the UK."



"This is the first centre of its kind in Britain. It is unique and it will help Edinburgh reaffirm itself as a pivotal place for Russian language research and interaction between Russia and the UK."

PHD student Ekaterina Popova makes use of the extensive new Russian library, essential for the completion of her thesis on the language of discrimination in contemporary Russia.

Music for all: University researchers strike a chord

Dr David Skulina and Dr Ben Schögler

An invention developed at the University of Edinburgh is bringing music to children who are unable to use traditional instruments.

The Skoog, a brightly coloured soft cube that is fun to touch yet robust enough to resist strong handling, allows children who are severely disabled to play music in an expressive and creative way. When squeezed, hit with a stick or even thrown against a wall, technology within the instrument's tactile surface converts the impact into the sound of various pre-programmed instruments, such as a flute, trumpet or drums. As a result, users can make a variety of sounds on the Skoog and alter pitch, timbre and volume with a very small range of movement – allowing people who have never played instruments before to become budding musicians.

Edinburgh researchers Dr Ben Schögler and Dr David Skulina developed the Skoog as part of a University project to make music accessible to everyone. Dr Schögler explains that while children have fun playing the Skoog, the creativity allowed by the instrument also greatly helps to improve concentration and communication skills.

"The Skoog is having a really positive impact on people's lives," he says. "Children make progress with the instrument in a single session – even in half an hour you can see them gaining in confidence, skill and dexterity."

The idea for the Skoog came to light in 2002 when a group of University researchers from Physics, Music and Engineering collaborated to design a new kind of instrument – one that wouldn't rely on its physical shape to produce sound. While instruments usually require specific actions, such as strings being plucked or horns being blown, those activities are impossible for some people to perform. But as the Skoog's sound comes from a computer, it doesn't require the instrument to be a specific shape, making it much easier to play.

"We wanted to make an instrument that could be played by non-musicians," says Dr Schögler. "Instruments are difficult to play, and it's harder if you're physically disabled. Making music is part of being human and plays a big part in how we learn, but previously there wasn't an instrument that allowed people who are physically impaired to do that."

Funding for the Skoog's development was awarded in 2005 from the National Endowment for Science, Technology and the Arts (NESTA). The funding body tasked the Edinburgh researchers with building an instrument that was not only accessible to all but also commercially viable. To help them meet that challenge, the Glasgow-based Tapestry Partnership – a group that promotes the best use of teaching methods – arranged for the researchers to visit schools across Scotland and investigate what type of instrument would be most appropriate.

Through group work and music therapy with children with special needs, the researchers found that children gave the best response when they could interact with something soft and tactile. After testing and building a prototype with wires, upholstery foam and tennis balls, the Skoog was born.

Although the response from both children and teachers to the new instrument was encouraging, the research team faced a difficult choice as to where to go next.

"We had two options – seek more funding to develop the Skoog further, or take the project on commercially ourselves," reflects Dr Schögler. "We thought we were on to something and that we could do this."

With help from Scottish Enterprise and Edinburgh Research and Innovation – the University's commercialisation arm – a company, called Skoogmusic, was created. The initial plan was to test how the Skoog would be received by the wider world, and in September 2009 the team took the instrument to a trade fair in Scotland. The response was immediate.

"We were just testing the water, but people loved it straight away," says Dr Schögler. "The reaction from the educational world was very positive – people seemed to like what the Skoog is, and what it's trying to do. It gave us the inspiration and the impetus to get through to the next phase, which was to secure funding."

Despite the parlous global financial climate, the Skoog's potential saw its makers secure an initial £400,000 from investors, allowing them to produce and start selling Skoogs in early 2010. Now, children in special needs schools across Scotland are using the device to make music, be creative and learn.

Alison Clark, a teacher at Hillside School in Cumnock, East Ayrshire, says the Skoog has made a real difference to her pupils. "Children at Hillside can't really access conventional musical instruments because of their disabilities, but they really enjoy playing with the Skoog," she explains. "You can tell from their body language and their facial expressions, and they'll even sing along."

For Skoogmusic, the plan is to keep spreading the Skoog to schools in the UK and beyond. Schools in New Zealand are already using the instrument and North America and Europe are also showing interest.

"There's been so much goodwill towards our project – from schools, local authorities and musicians – but we need to use that to make sure the Skoog is widely used in education," says Dr Schögler. "Already, teachers are using it outside of special needs education to make compositions and video pieces, and we want to do what we can to support people using the Skoog in different ways and different areas."

One of those areas is in public performance. In November 2009, one thousand children from the schools who assisted in testing the Skoog went to Glasgow's Royal Concert Hall to perform a new composition by Nigel Osborne, the University's Reid Professor of Music and one of the key researchers behind the instrument. Four children playing Skoogs accompanied a full orchestra and choir, performing a piece that celebrated the device's creation.

"It's important to get children making music from a young age to keep them engaged creatively and to help them to be happy," says Dr Schögler. "And it's been great to see children realise that they can use the Skoog to do that."

A pupil at Hillside School in Cumnock, East Ayrshire, enjoys playing the Skoog.

Explosive evidence: helping better understand natural hazards

Dr Thor Thordarson

At the age of 15, Thor Thordarson was walking on a glowing lava flow when he felt his rubber boots begin to melt. He turned around and ran.

Now, as Reader in Volcanology and Natural Hazards at the University of Edinburgh, Dr Thordarson is an expert voice on the science behind the volcanic ash cloud that grounded flights across Europe in the spring of 2010.

Dr Thordarson knew from a young age that he wanted to be a scientist, but sensed he would not be satisfied studying physics, chemistry or biology in isolation. "I picked geology for a very simple reason: it would mean more field trips," he says. "The other sciences involved too much lab work, and I wanted to look at nature. I got into geology and found it intriguing. The two main interests in geology that stood out were sedimentology and petrology. Then I realised that with volcanology I could combine the two."

Dr Thordarson's academic career has included a masters degree at the University of Texas at Arlington; a PhD in volcanology at the University of Hawaii; a spell studying volcanic eruptions in New Zealand; and research for the mining industry in Australia. He has studied volcanic eruptions along the Hawaiian Chain and across the Columbia River Plateau, the North Atlantic Igneous Province, the Deccan Plateau, the Ontong Java Plateau and the greenstone belts of Australia and Finland. But it is his native Iceland that has been the recurring locus of his work.

"I decided very consciously that Iceland would be my laboratory," he says. "I'm an Icelander and I know the geological history of the country. It is an exceptional laboratory; there are very few places in the world where you have such diverse volcanology. It's an ideal place to do the necessary fieldwork to take on outstanding problems in volcanology."

In March 2010 the Icelandic volcano Eyjafjallajökull erupted, sending a vast swathe of ash into the sky. Dr Thordarson's measured and incisive commentary on the eruption made a major contribution to the media and wider public's understanding of the event.

The eruption's unusual characteristics intrigued Dr Thordarson from the outset. "What was interesting was that it was a sustained, yet very weak explosive eruption in comparison with past events," he explains. "It didn't feature very high eruption columns, but it produced a lot of very fine ash. This combination and the prevailing west winds at the time are the main reasons why a relatively small eruption dispersed ash over so much of Europe."

Similar ash clouds have been recorded over the past century; one in 1947 spread across Ireland, UK, southern Scandinavia and Finland. A succession of ash plumes since 1970 were carried north rather than west, sparing Europe any problems – but all were investigated and reported by scientists. In 2000 a NASA plane flew into an ash cloud, resulting in £3.5 million worth of damage to its engines. But the Eyjafjallajökull eruption was presented by much of the media as a new phenomenon, and the authorities were initially caught off guard.

"The surprising thing to me is how poorly prepared communities were for dealing with the consequences of the flight restrictions induced by the ash cloud," comments Dr Thordarson. "The UK Met Office made their predictions well. But a lot of people were surprised that ash from Iceland would reach the rest of Europe, yet this wasn't hidden knowledge. A number of researchers had already identified horizons of ash from Iceland in peat and lake sediment across the UK, Scandinavia and Germany."

Though disruptive to travellers and commercially damaging to the airline industry, the ash cloud also produced rewards. For Dr Thordarson and his colleagues, it was an opportunity for research, for the pooling of ideas and data, and, vitally, for communicating the science behind the eruption to a larger audience.

"For the volcanology community and the science community it's been a wonderful opportunity," he explains. "One of the things that we're trying to make sure happens as a result of this, is that there's an interdisciplinary approach, so that good links are forged between the communities of atmospheric, remote sensing and volcanological sciences. We're trying to connect all these things together to establish a broad collaboration among European scientists, and with scientists in the US."

The University of Edinburgh recently announced a new project, to be undertaken by the volcanology team in the School of GeoSciences, to study the effects of Icelandic eruptions on Scotland. The initiative includes the appointment of a new Royal Society Fellow, Dr John Stevenson. It is hoped that this research will ultimately help to deepen our understanding of the pattern and behaviour of volcanic ash clouds. Information gathering and preparation will be crucial, Dr Thordarson warns, because further ash clouds are highly likely to affect us again.

"Social memory is short," he says. "We have to ensure that this doesn't get forgotten about, because it might happen again – as soon as next year or next month. We will gain a great deal if we are ready for it – reactive responses always cost more than if you've prepared yourself. I think if we do our research robustly and are willing to apply our resources together then we might actually be able to reduce the impact of an ash cloud, much more than we did last time."

Meeting the challenge created by any future natural hazards will create not only a powerful sense of solidarity but also a clearer articulation of scientific ideas, Dr Thordarson believes. "Natural hazards are going to be a continuing issue – but for hazards to be hazards you need to have people, as this eruption proved," he explains.

"We are increasing our population, so more people are living in areas exposed to hazards, and eventually will be affected. The better we deal with them, the less impact they will have on our lives. But that takes a communal effort. I hope that as a scientific community we demonstrate that we can always put the advancement of scientific knowledge ahead of personal gain."

During the volcanic ash cloud crisis, expert advice helped inform public understaning.

News in brief

1 August 2009
Motor neurone disease research centre officially opens

The University's Euan MacDonald Centre for Motor Neurone Disease Research was officially opened by the University's Chancellor, HRH Prince Philip, Duke of Edinburgh. The Centre brings together a hub of experts in areas including stem cell and neurological research. It was set up following a donation from Scottish businessman Donald MacDonald, and his son Euan MacDonald, 34, who was diagnosed with motor neurone disease (MND) in his twenties. Researchers, working alongside national and international specialists, will look at why motor neurones – cells that control voluntary muscle activity such as speaking, walking and breathing – break down. The Centre will also work to translate research from the laboratory to the clinic. Centre Director Professor Siddarthan Chandran will collaborate with NHS colleagues and MND Scotland to set up a clinical register of MND patients to share knowledge with a view to establishing clinical trials.

2 September 2009
Bestselling author celebrates Main Library upgrade

Crime writer Ian Rankin joined celebrations to mark the transformation of three floors of the University's Main Library. The author studied English Language and Literature at the University from 1978 to 1985 and was a regular visitor to the George Square facility while writing his first two novels as a postgraduate student. The Grade A-listed building, designed by Sir Basil Spence in the 1960s, is undergoing redevelopment in response to the ever-changing needs of study and research in the 21st century. The completed three floors contribute to the Library's new look, which preserves Sir Basil's iconic design, while introducing contemporary elements to offer a more open, flexible study space. New features include study pods for group work and 'cool' zones for solo study, as well as a cafe, which is open to the public. The full redevelopment project is scheduled for completion in 2012.

3 October 2009
Research facility dedicated to helping epileptic children

A new research centre to help children with epilepsy was established at the University. Named the Muir Maxwell Centre for Childhood Epilepsy Research, the facility is the UK's first dedicated medical research centre to focus exclusively on translating laboratory research findings about childhood epilepsy directly into improved clinical care. The centre's foundation was made possible by a £1 million pledge from the Muir Maxwell Trust, a paediatric epilepsy charity. The trust was established by parents Ann and Jonny Maxwell after their son Muir was diagnosed with epilepsy in infancy. There are more than 700,000 children with epilepsy in the UK. The research programme at the Muir Maxwell Centre for Childhood Epilepsy will benefit from state-of-the-art imaging equipment, including the UK's first ultra-fast CT scanner. Earlier detection of epilepsy allows for greater use of preventative measures to control seizures. Research will focus on improving diagnosis of the condition.

4 November 2009
Scientists make advances towards superbug threat

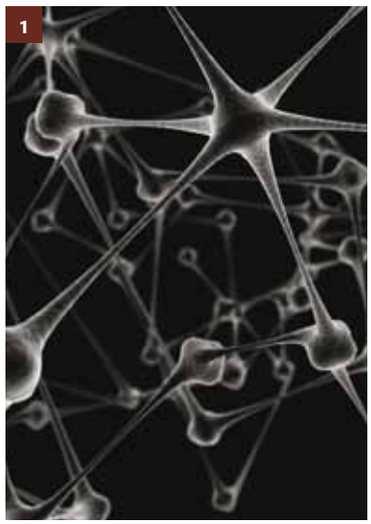
Edinburgh researchers, working with colleagues from the University of St Andrews, Glasgow Caledonian University and the University of the Highlands and Islands Millennium Institute, developed a new compound that could help fight hospital-acquired infections such as MRSA. These bugs are thought to affect more than 300,000 patients in the UK every year and cause around 5,000 deaths annually. The chemical mimics the body's ability to fight bacteria and could be added to detergents used to coat hospital equipment or incorporated into dressings. The compound works by trapping and releasing the gas nitric oxide, which is also produced by our own immune systems to kill bugs. Previously, harnessing the gas has proved difficult because it dissipates into the atmosphere within seconds of being released from storage. The new compound is able to trap the gas, which is released only when the compound gets wet, and researchers can now use the compound to kill a range of bacteria including antibiotic-resistant bugs such as C.difficile.

5 December 2009
Warm reception at climate change conference

A team of University delegates received a standing ovation at the UN Copenhagen Climate Change Conference 2009. Students and graduates from the MSc Carbon Management programme gave a presentation as part of Scotland Day, organised by the Scottish Government, British Council Scotland and the University. Attendees discussed the need for an overarching, enforceable agreement for all nations and cited recent Scottish legislation as an example for other nations to follow. They also emphasised the importance of effective financial mechanisms and the sharing of technologies relevant to climate change. The University was awarded official observer status at the Copenhagen conference, which was intended to decide the future of global climate action beyond 2012.

6 January 2010
University-backed start-up secures Chinese distribution deal

A biotech company launched through the University has signed a multimillion-pound deal to sell its products in China. Burdica Biomed, a Fife-based firm that develops lubricant products, has reached a partnership agreement with Sinopharm, China's largest pharmaceutical and medical device distributor. Following a 12- to 18-month process of regulatory approval, Sinopharm will distribute Burdica Biomed's products in China under the terms of the 10-year deal. The Scottish firm was launched in 2007 with support from the University business support initiative, the Edinburgh Pre-Incubator Scheme (EPIS). Adrian Smith, EPIS Programme Director, said: "This is a huge success for Burdica and the University. It shows that supporting innovation can have real results with substantial financial consequences for Scottish companies and the economy."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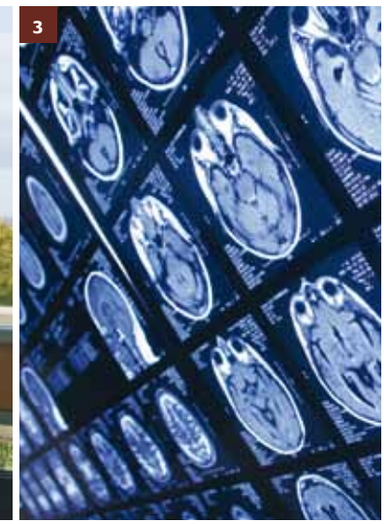
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News in brief

7 February 2010
Researchers granted £2 million to tackle cattle disease in Africa

University researchers in partnership with Kenyan and Nigerian scientists have been awarded a £2 million grant to tackle cattle disease. Livestock diseases can cause a serious barrier to development in Africa, where decreased productivity can result in significant economic losses. The project will target two infections of domestic livestock – East Coast Fever and Trypanosomiasis. East Coast Fever alone is estimated to cost in excess of $US300 million each year. Trypanosomiasis is a double hitter – not only do infected cows become ill, but if a tsetse fly bites an infected cow, the insect can then pass the disease to humans causing potentially fatal sleeping sickness. Currently the best treatment is a single dose of an anti-parasitic drug, which can clear the animal of infection and prevent reinfection. The team hopes to develop vaccines and implement prevention programmes by working directly with local communities.

8 March 2010
New centre will foster understanding between Muslim world and the West

A new University research centre to foster deeper understanding between the Muslim world and the West has been officially opened. The Prince Alwaleed Bin Talal Centre for the Study of Islam in the Contemporary World will explore Islamic civilisation and issues relating to Islam in Britain. The Centre, set up with funding from the Alwaleed Bin Talal Foundation, was opened by HRH Prince Alwaleed of Saudi Arabia at a ceremony in Edinburgh. The prince, who heads the foundation and is also the founder and chairman of the Kingdom Holding Company, was also awarded an honorary degree for his business and philanthropy. Islamic and Middle Eastern Studies at the University is one of the world's leading academic departments of its kind. It hosts one of the UK's largest concentrations of expertise on the Arabic-speaking world, bringing together 20 full-time members of staff active in a variety of fields.

9 April 2010
Innovative art exhibition reveals insights into ageing

The process of ageing was highlighted in an innovative art exhibition at the University's Inspace Gallery. Using video and photography to demonstrate how movement and facial expressions reveal the ageing process, *Transformations – Life Portraits* by Linda Kosciewicz-Fleming featured images of people taking part in a major scientific study into the mental and physical aspects of ageing. The 48-hour exhibition was based on the Lothian Birth Cohort 1936 – a group of 1,091 individuals who were born in 1936 and took part in the Scottish Mental Survey of 1947 – which has been studied by University psychologists for the past six years. The researchers have looked at a number of physical and mental functions of the group as they grow older, including memory, speed of thinking, many aspects of fitness and health, eyesight and blood composition. The researchers hope to form a clearer picture of why some people age better than others.

10 May 2010
Greenland ice sheet movement aids sea-level forecasts

University researchers studying the Greenland ice sheet have identified a close link between ice movement and summer ice melt that could help improve the accuracy of sea-level forecasts. The research, involving scientists from the universities of Aberdeen, Aberystwyth and Newcastle, used satellite receivers and climatic sensors to track a 35-kilometre section on the western edge of the ice sheet. Their findings showed how changes in surface meltwaters controlled the movement of waters underneath the ice sheet and the rate at which the ice slid over its bed. Researcher Dr Peter Nienow, of the University's School of GeoSciences, explained: "We now have a better understanding of how the ice sheet responds dynamically to changes in air temperature. This study, when incorporated into numerical models, should help improve our projections of sea-level rise in response to climate change."

11 June 2010
Discovery offers hope for Alzheimer's disease sufferers

Edinburgh scientists have discovered that a protein that controls brain activity could play a key role in offering hope for new treatments for Alzheimer's disease and epilepsy. Researchers analysed the way brain cells communicate at times of peak activity – such as the creation of new memories or in epileptic seizures – when electrical signalling by the brain's neurons is increased. They found that the GSK3 enzyme helps to suppress brain activity by reducing the flow of chemical messengers between brain cells. This raises the possibility that drugs could be developed to block the effect of this enzyme, increasing chemical messaging between brain cells. This could help to protect memory in people with Alzheimer's disease and slow the progression of their illness. Researchers say that drugs could also be developed to boost the effect of the enzyme, slowing brain activity in epilepsy patients and reducing the effects of their seizures.

12 July 2010
New £3.5m systems medicine venture unites scientists

A new centre to support research in the emerging discipline of systems medicine was made possible as a result of a £3.5 million grant from the Wellcome-Wolfson Foundation. Systems medicine is revolutionising the way in which researchers try to understand and treat common diseases, by combining expertise in chemistry, physics, computer science, mathematics, genetics and medicine. The facility will link the three world-leading research centres that make up the Institute of Genetics and Molecular Medicine (IGMM). These are the Molecular Medicine Centre, the Edinburgh Cancer Research Centre and the Medical Research Council Human Genetics Unit. Their interests span from birth defects to end-of-life care, including psychiatric disorders, ageing, stroke, diseases of the brain, kidney, eye, bones, joints, lungs and intestine, and cancer. By adding chemists, physicists and computer scientists, researchers hope that the Centre will boost further the Institute's reputation for translational medicine – the process that transforms laboratory findings into new ways of diagnosing and treating patients.


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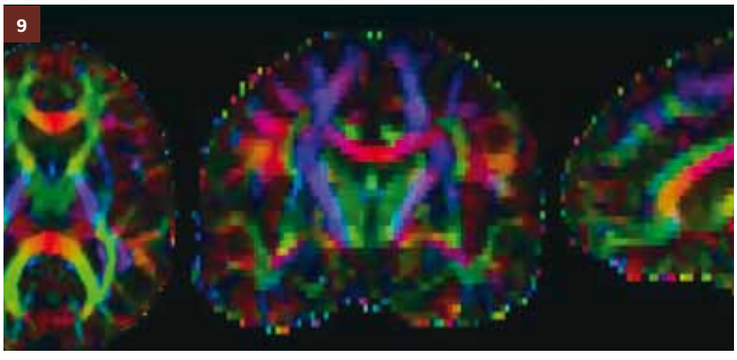
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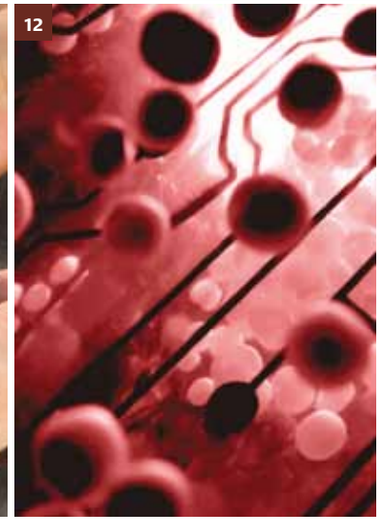
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Financial review

In view of the very challenging circumstances for the global economy over the last two years, it is good to be able to report that the University has had another successful year. We have continued to grow our turnover, increasing it by 7.2 per cent, from £592 million to £634 million. It is also pleasing to note the broad spread of activities that have contributed to the continuing growth in income. Examples include:

- **Tuition fees grew by nearly 20 per cent, with particularly strong growth in international student fees.**
- **Research grants and contracts continued to grow and increased overall by 6.1 per cent. Increases of 9.4 per cent in research council income and 9.3 per cent in charity income were offset by a reduction in grants from government bodies.**
- **Other income also rose, with residences, catering and conference income being the major factors in an overall 3.4 per cent increase.**

On the expenditure side of the account, staffing costs have been constrained as part of the University's efforts to keep a tight control on all its costs. Senior management has enhanced its control on the filling of posts and a continuing programme of early retirement and voluntary severance has contributed to the overall constraint.

The financial year saw a record intake of home and EU students in what was also a year of record numbers of applications. Our international student numbers also increased, by 16 per cent, as a result of the introduction of a range of new postgraduate taught courses and a strong push on increasing international students on our undergraduate programmes.

We continued to open new teaching and research facilities during the year, including the following:

- **a £4.4 million extension to the Centre for Sport and Exercise**
- **completion of the £19 million Clinical Research Imaging Centre**
- **further, phased redevelopment of the Main Library**
- **a £17 million refurbishment of the Adam Ferguson Building to house the Business School.**

Work continued on the new, £44 million Royal (Dick) School of Veterinary Studies' building at Easter Bush and the £49.5 million Scottish Centre for Regenerative Medicine at Little France. In total £75 million was invested in the estate and infrastructure during the financial year. The University has updated its estates strategy with an overall vision to provide the quality physical and IT-related infrastructure appropriate to the needs of a leading international centre of academic excellence.

The new Vet School and the Scottish Centre for Regenerative Medicine will be completed by the end of 2010/11, at a total cost of £110 million, including the related infrastructure. A new building for the Roslin Institute at Easter Bush is expected to cost £18 million. Therefore we expect that cash balances will fall more substantially in the coming year, as these projects come to fruition.

The total value of the endowment fund increased during the year from £165 million to £200 million, reflecting the strong recovery in financial markets. The total return on the fund was 24.5 per cent. Income from endowments stood at £7.4 million, representing an increase of 5.4 per cent, comfortably ahead of inflation.

The economic impact the University has across Scotland continues to increase. The University created a record 40 new companies during the past year, further strengthening its position as Scotland's leading research institution. We continue to build on our world-class performance in the area of company spin-out and development and we are encouraged that the BioQuarter at Little France, adjacent to our Medical School, is now being developed to deliver the space to allow research to develop drugs and treatments.

We are working to deliver two exciting mergers into the University. The Medical Research Council's Human Genetics Unit may join with the University's Centre for Molecular Medicine and the Edinburgh Cancer Centre to form the Institute of Genetics and Molecular Medicine. In addition, subject to Scottish Government approval and the resolution of the financial terms, Edinburgh College of Art may join with the University in 2011.

These mergers would greatly benefit the students and staff of all three institutions.

The higher education sector now faces a period of uncertainty. Despite this, the University will continue to push forward with its overall strategic plan. Increased focus is already being put on those areas that grow non-public funding, such as international students and commercial and EU research grant funding. Work is also continuing to drive efficiency and very careful management of staff numbers.

It is encouraging to be able to report that 2010/11 has started strongly for the University. International student numbers are up again, research grant funding is stable and substantial donation funding continues. The scale of the reduction in public funding is however starting to emerge. Coupled with the likely changes to higher education funding in the rest of the UK, following the Browne Report, this will have a major impact on all Scottish institutions. In acting decisively, and in anticipation of the changing financial environment, the University is well placed to address these major challenges.

Group income and expenditure account
for the year ended 31 July 2010

	2010	2009
	£'000	£'000
Income		
Funding council grants	197,778	183,524
Tuition fees and education contracts	109,940	91,932
Research grants and contracts	185,279	174,648
Other income	131,391	127,041
Endowment and investment income	9,591	14,388
Total income	**633,979**	**591,533**
Expenditure		
Staff costs	339,749	328,287
Other operating expenses	243,008	231,160
Depreciation	24,333	21,957
Interest payable	6,745	6,232
Total expenditure	**613,835**	**587,636**
Surplus on continuing operations after depreciation of assets at valuation and before taxation	**20,144**	**3,897**
Loss on disposal of fixed assets	(997)	(77)
Surplus after depreciation of assets at valuation and disposal of assets but before taxation	**19,147**	**3,820**
Taxation	(3)	(3)
Minority interest	(8)	7
Transfers (to)/from accumulated income in endowment funds	(820)	142
Surplus for the year retained within general reserves	**18,316**	**3,966**

Group balance sheet
as at 31 July 2010

Fixed assets	1,139,473	1,055,623
Endowment assets	200,348	164,746
Net current assets	37,552	40,029
Total assets less current liabilities	**1,377,373**	**1,260,398**
Creditors: amounts falling due after more than one year	(55,169)	(56,363)
Provisions for liabilities and charges	(8,077)	(7,782)
Pension liabilities	(76,833)	(106,321)
Total net assets	**1,237,294**	**1,089,932**
Represented by		
Deferred capital grants	**278,263**	**253,572**
Endowments		
Expendable	137,000	114,502
Permanent	63,348	50,244
Total endowments	**200,348**	**164,746**
Reserves		
Revaluation reserve	569,621	542,574
General reserves excluding pension liability	265,879	235,351
Pension reserve	(76,833)	(106,321)
Total reserves	**758,667**	**671,604**
Minority interests	16	10
Total funds	**1,237,294**	**1,089,932**

This information reflects the audited accounts for the year to July 2010, published in December 2010. Anyone requiring further information is invited to contact the University's Director of Finance.

Honorary graduations and other distinctions

Those awarded honorary degrees between 1 August 2009 and 31 July 2010

Sir Tom Hunter
Entrepreneur and philanthropist (Doctor *honoris causa*)

Mr Michael Boyd
Artistic Director of the Royal Shakespeare Company (Doctor of Letters)

Mr Vartan Gregorian
President of the Carnegie Corporation of New York (Doctor *honoris causa*)

Dr Elisabeth Svendsen MBE
Founder of the Elisabeth Svendsen Trust for Children and Donkeys (Doctor *honoris causa*)

Dr Ann Matheson
Retiring Secretary of the General Council, the University of Edinburgh (Doctor *honoris causa*)

Professor Leonard Lindoy
Professor Emeritus of Inorganic Chemistry, the University of Sydney (Doctor of Science)

Mr John Leighton
Director-General of the National Galleries of Scotland (Doctor *honoris causa*)

Professor Lap-Chee Tsui
Vice-Chancellor of the University of Hong Kong (Doctor *honoris causa*)

Professor John Cioffi
Hitachi Professor Emeritus of Engineering, Stanford University, and CEO of ASSIA Inc, California (Doctor of Science)

Rt Hon Lord Wallace of Tankerness QC
Former MSP and member of the House of Lords (Doctor *honoris causa*)

Madame Xu Lin
Director-General of the Office of Chinese Language Council International of the People's Republic of China (Hanban) (Doctor *honoris causa*)

Professor Stephen Byram Furber CBE
ICL Professor of Computer Engineering, the University of Manchester (Doctor of Science)

Mr Paul Gudgin
Former Director of the Edinburgh Festival Fringe (Doctor *honoris causa*)

Professor Aubrey Manning OBE
Zoologist, broadcaster and Professor Emeritus of the University of Edinburgh (Doctor of Science)

Baroness Vivien Stern CBE
Senior Research Fellow at the International Centre for Prison Studies, King's College London, outgoing Chair of the Scottish Consortium on Crime and Criminal Justice (Doctor of Laws)

The late Professor Gavin Brown
Inaugural Director of the Royal Institution of Australia (Doctor of Science)

Professor Andrew Pollard
Professor of Education and Research Fellow of the ESRC's Teaching and Learning Research Programme (Doctor of Education)

Professor Susan Hockfield
President of Massachusetts Institute of Technology (Doctor *honoris causa*)

Dr Irene Zubaida Khan
Secretary General of Amnesty International (Doctor *honoris causa*)

Sir Alan Langlands
Former Principal and Vice-Chancellor of the University of Dundee and Chief Executive of the Higher Education Funding Council for England (Doctor *honoris causa*)

Ms Annie Lennox
Musician and human rights campaigner (Doctor *honoris causa*)

Mr Jamie Byng
Owner of Canongate Books (Doctor of Letters)

Mr Jim McFarlane
Managing Director Operations, Scottish Enterprise (Doctor *honoris causa*)

HRH Prince Alwaleed Bin Talal Bin Abdulaziz Alsaud
Philanthropist and Chairman of the Kingdom Holding Company (Doctor *honoris causa*)

Professor Sir Charles Duncan Rice
Former Principal and Vice-Chancellor, the University of Aberdeen (Doctor *honoris causa*)

Professor Jeffrey Scott Flier
Dean of the Faculty of Medicine and Caroline Shields Walker Professor of Medicine, Harvard University (Doctor *honoris causa*)

Benefactors

This award recognises as University benefactors individuals or organisations that have made significant contributions, financial or otherwise, to the University.

Professor Alice Brown
First Scottish Public Services Ombudsman, Former Vice-Principal and Co-Director of the Institute for Governance at the University of Edinburgh (Doctor *honoris causa*)

Professor Peter Eyre
Dean Emeritus of the Virginia-Maryland Regional College of Virginia Tech (Doctor of Veterinary Medicine and Surgery)

Dr Maria Dlugolecka-Graham
Coordinator of the Polish School of Medicine, the University of Edinburgh (University Benefactor)

Awards and achievements

Awards and accolades bestowed upon members of staff and associates of the University of Edinburgh between 1 August 2009 and 31 July 2010.

Queen's Honours

In the Queen's New Year Honours List, **Dr Maria Dlugolecka-Graham**, the University's Coordinator of the Polish School of Medicine, was awarded an MBE for services to Polish–Scottish relations.

In the Queen's Birthday Honours List, the following staff members and associates were recognised:

Professor Veronica Van Heyningen FRS, based within Medical and Development Genetics at the MRC Human Genetics Unit, part of the Institute for Genetics and Molecular Medicine, recieved a CBE for services to science.

Mr Utheshtra Chetty, retired Senior Consultant Surgeon with the Edinburgh Breast Unit and Honorary Senior Lecturer with the University's School of Surgery, recieved an OBE for services to medicine.

Mrs Rosalind Newlands, Course Director of the Scottish Tourist Guides Association Blue Badge Training Course, with the University's Office of Lifelong Learning, recieved an OBE for services to the tourist industry.

Mr Jim Aitken, Director of the University's Centre for Sports and Exercise, recieved an MBE for services to student sport.

Mr Donald Blue, CHASTE Project Coordinator, Health and Safety, recieved an MBE for services to health and safety.

University awards

Chancellor's Awards

These awards are given in recognition of innovation, relevance, creativity and personal dedication. They are presented annually by HRH Prince Philip, Duke of Edinburgh, Chancellor of the University.

Harry Campbell, Professor of Genetic Epidemiology and Public Health and **Malcolm Dunlop**, Professor of Coloproctology and Consultant Colorectal Surgeon, both from the School of Molecular & Clinical Medicine. Professors Campbell and Dunlop were jointly awarded in recognition of their research into genetic susceptibility into colorectal cancer.

Dr John Lee, Deputy Director of the University's Human Communication Research and Programme Organiser of the MSc in Design & Digital Media. Dr Lee was presented with the Teaching Award to honour his work with both the School of Informatics and the School of Arts, Culture & Environment. Dr Lee led the development of YouTute, an innovative learning resource that makes video recordings of tutorial discussions available to students.

Giles Hardingham, Professor of Molecular Neurobiology, School of Biomedical Sciences. Professor Hardingham was presented with the Rising Star Award acknowledging his research contribution to furthering understanding of treatment requirements for neurodegenerative conditions such as stroke and Alzheimer's disease.

Principal's Medal

This annual award recognises staff or students who, as individuals or groups, have made a significant contribution to support or benefit the wider community.

The 2009 award was given to Edinburgh graduate and fair trade campaigner **Ben Miller**, who was honoured for his significant contribution to fair trade initiatives for the University and the city of Edinburgh.

Tam Dalyell Prize for Excellence in Engaging the Public with Science

Open to all staff, this annual prize recognises an individual or group for work with a focus on science communication. Such work includes hosting school visits, public events or projects in publishing or broadcasting.

The 2009 prize was presented to **Chris Bishop**, Professor of Computer Science in the University's School of Informatics, in recognition of his public engagement activities, including presenting the Royal Institution Christmas Lectures 2008, which were viewed by almost five million people.

EUSA Teaching Awards

The EUSA Teaching Awards reward teaching excellence across 10 categories.

2010 winners

Best Department: Informatics
Best Course: Financial Services Marketing
Teaching in an International Context: Yoko Takahashi, Japanese
Best Feedback: Dr Fabian Hilfrich, History
Best e-learning: Phil Scott, Informatics
Best Innovative Teaching: Dr Mark Aspinwall, Politics and International Relations
PricewaterhouseCoopers Teaching Employable Skills Award: Dr David Reay, GeoSciences
Vitae Best Postgraduate Who Tutors Award: Dr Sean Brocklebank, Economics
Best Research Supervisor: Professor Richard Taffler, Business School
Robert Kendall Award for Teaching in Medicine and Veterinary Medicine: Dr Susan Kempson, Preclinical Veterinary Sciences
Simon van Heyningen Award for Teaching in Science and Engineering: Paul McLaughlin, Biological Sciences
Ian Campbell Award for Teaching in Humanities and Social Sciences: Dr Dimitri Tsintjilonis, Social Anthropology
Overall High Performer: Dr Richard Milne, Biological Sciences

Fellowships

Royal Society

Professor Eleanor Campbell, School of Chemistry, has been elected Fellow of the Royal Society.

Royal Society of Edinburgh

Edinburgh academics elected to the Fellowship of the Royal Society of Edinburgh in 2010 were:

- **Professor Michael Paul Fourman**, Chair of Computer Systems, School of Informatics
- **Iain Grant Gordon**, Professor of Mathematics, School of Mathematics
- **Christopher Hall**, Professor of Materials, School of Engineering
- **David Reginald Francis Leach**, Professor of Molecular Genetics, Head of the Institute of Cell Biology, School of Biological Sciences
- **Edgar Peltenburg**, Honorary Fellow and Emeritus Professor of Archaeology, School of History, Classics & Archaeology
- **Jack Satsangi**, Professor of Gastroenterology, School of Molecular & Clinical Medicine
- **Professor Paul Martin Sharp**, Alan Robertson Chair of Genetics, School of Biological Sciences
- **Professor Richard Michael Sharpe**, Senior Scientist and Programme Leader, MRC Human Reproductive Sciences Unit, Centre for Reproductive Biology
- **Steve Yearley**, Professor of the Sociology of Scientific Knowledge, Director of the ESRC Genomics Policy and Research Forum

British Academy

Alan Barnard, Professor of the Anthropology of Southern Africa, School of Social & Political Science, was elected Fellow of the British Academy.

Royal Academy of Engineering

Professor José Torero, School of Engineering, has been elected Fellow of the Royal Academy of Engineering.

Innovators in research and technology

Honorary Fellow **John W Arthur**, School of Engineering, was awarded the IEEE Donald G Fink Prize Paper Award for his paper *The Fundamentals of Electromagnetic Theory Revisited*.

Dr Euan Brechin, School of Chemistry, received the Royal Society of Chemistry's Corday-Morgan Prize, which recognises important contributions to the discipline.

Professor Brian Charlesworth, School of Biological Sciences, was awarded the Darwin-Wallace Medal by the Linnean Society. The medal rewards major advances in evolutionary biology.

Professor David Leigh, School of Chemistry, was one of three winners of the Royal Society of Chemistry's Tilden Prize, which recognises advances in the discipline in honour of former Royal Society of Chemistry President Sir William Augustus Tilden.

Dr Ben Panter, based within the University's Institute for Astronomy, won first prize in the Thales Scottish Technology Prize for his proposal to develop technology that could assist with the detection of improvised explosive devices, potentially saving the lives of soldiers and civilians in war zones. His winning submission earned £25,000 for the University and a personal prize of £5,000. A team from the School of Engineering also won a finalist prize for its proposed Programmable Imaging Stream Processor. The team comprised **Dr Sami Khawan**, **Mr Ioannis Nousias**, **Mr Mark Muir** and **Professor Tughrul Arslan**.

Professor Gordon Plotkin, School of Informatics, received the ACM SIGPLAN Programming Languages Achievement Award.

Professor Jacques Vanneste, School of Mathematics, was awarded one of the University of Cambridge's oldest prizes. He received the Adams Prize in recognition of his work in the area of fluid mechanics, this year's prize topic. The prize is awarded annually to a UK-based researcher, usually under the age of 40, conducting first-class international research in mathematics.

Professor Sir Ian Wilmut, Director of the University's MRC Centre for Regenerative Medicine, was awarded the 2009 Nexxus Annual Lifetime Achievement Award (East).

Dr Keisuke Kaji, also from the MRC Centre for Regenerative Medicine, received the 2009 Nexxus Annual Young Life Scientist of the Year Award (East).

University of Edinburgh spin-out company **ImmunoSolv** was given the 2009 Nexxus Annual Life Science Award for Innovation.

Influential leaders

Candace Currie, Professor of Child and Adolesent Health, was one of 10 women to receive the Action for Children Scotland Woman of Influence Award. The accolade is given to women who have made a significant impact on Scottish society.

Dr Sharon Hannah, Senior Laboratory Manager at the Queen's Medical Research Institute and Business Manager of the MRC Centre for Inflammation Research, was selected by the Royal Society as one of 10 people to receive its Hauksbee Award. Named in honour of Sir Isaac Newton's laboratory assistant Francis Hauksbee, the award acknowledges unsung heroes in scientific support roles.

The University's Principal, **Professor Sir Timothy O'Shea**, was awarded the 2009 CASE Europe Leadership award in recognition of the leadership ability he has demonstrated throughout his career.

Mr David Somervell, Sustainability Adviser, Estates and Buildings, was selected for the Scottish Green List 2010, a roll call of Scotland's 20 most influential individuals making the country more sustainable.

International recognition

Honorary Professor Sir Michael Atiyah was awarded the Grande Médaille of the Institut de France Académie des Sciences. The award is given to a scholar who has contributed to the development of science in an influential way.

Paul Palmer, Professor of Quantitative Earth Observation, School of GeoSciences, was awarded the Zeldovich Medal, an honour offered jointly by the Committee on Space Research (COSPAR) and the Russian Academy of Sciences. The medal was given in recognition of his work in the field of space science.

Professor David Porteous, Centre for Molecular Medicine, and **Professor Margaret Frame**, Centre for Cancer Research, were elected members of the European Molecular Biology Organization (EMBO).

Collaborating for excellence

The University's department of **Information Services** and the **School of Education** were awarded jointly for their virtual graduation project. The online graduation ceremony, offered to graduands of the distance learning MSc in e-learning, was awarded an Edublog Award for Best Educational Use of a Virtual World.

The **University's Press Office**, Communications and Marketing, received a CASE Gold award for news writing.

A team including **Professor Simon Kirby** and **Mr Barry (Ziggy) Campbell** from the School of Philosophy, Psychology & Language Sciences recieved a BAFTA Scotland award for their Cybrathon project – a robotic one-man band that plays music according to its 'mood'.

Talent for the future

Dr David Marenduzzo, School of Physics & Astronomy, was awarded the 2010 Young Scientist Prize by the C3 Commission on Statistical Physics of the International Union of Pure and Applied Physics (UPAP).

Postgraduate students from the University's Geographical Information Sciences programmes picked up awards at UK conferences. PhD student **Catherine Schroder** won Best Paper by a Young Researcher at the Geographical Information Research UK conference in London. A team of MSc students, **Christopher Barber**, **Amin Abdalla**, **Laura Mason and Dimitris Stratoulias**, won the prize for 'the most pragmatic means of enabling realisation of the aims of One Scotland, One Geography' at the AGI Scotland conference in Glasgow.

Appointments

Appointments commenced between 1 August 2009 and 31 July 2010

College of Humanities & Social Science

Personal Chairs

Professor Clive Bonsall
Personal Chair of Early European History

Professor Stephen Cairns
Personal Chair of Architecture and Urbanism

Professor Simon Kirby
Personal Chair of Language Evolution

Professor Lesley McAra
Personal Chair of Penology

Professor James O'Brien
Personal Chair of Leadership and Professional Learning

Professor Kay Tisdall
Personal Chair of Childhood Policy

Professor Alice Turk
Personal Chair of Linguistic Phonetics

Professorships

Professor Cara Aitchison
Chair of Social and Environmental Justice

Professor Greg Walker
Regius Chair of Rhetoric and English Literature

Honorary Professors

Mr Malcolm Fraser
School of Arts, Culture & Environment

Mr Neil Gillespie
School of Arts, Culture & Environment

Mr Harvey McGregor QC DCL
School of Law

Mr Alastair Sutton
School of Law

Professor Anthony Cohen CBE FRSE
School of Social & Political Science

Ms Susan Deacon
School of Social & Political Science

College of Medicine & Veterinary Medicine

Personal Chairs

Professor Mark Evans
Personal Chair of Cellular Pharmacology

Professor Peter Kind
Personal Chair of Developmental Neuroscience

Professor Simon Maxwell
Personal Chair of Student Learning (Clinical Pharmacology and Prescribing)

The late Professor Walter Muir
Personal Chair of Developmental Psychiatry

Professor Alan Archibald
Personal Chair of Mammalian Molecular Genetics

Professor Stephen Bishop
Personal Chair of Animal Disease Genetics

Professor David Burt
Personal Chair of Comparative Genomics

Professor Nora Hunter
Personal Chair of Neuropathogenesis

Professor Jean Manson
Personal Chair of Neurodegenerative Disease

Professor John Woolliams
Personal Chair of Mathematical Genetics

Professor Elizabeth Glass
Personal Chair of Veterinary Immunogenetics

Professor Helen Sang
Personal Chair of Vertebrate Molecular Development

Professorships

Professor Peter Brophy
Chair of Anatomy

Professor Alasdair MacLullich
Chair of Geriatric Medicine

Professor David Cameron
Chair of Oncology

Professor Edwin van Beek
SINAPSE Chair of Clinical Radiology

Professor Asif Ahmed
Chair of Vascular Biology

Professor Bruno Peault
Chair of Vascular Regeneration

Professor Peter Kaiser
Chair of Animal Infectious Diseases

Honorary Professors

Professor Ian Maudlin
School of Biomedical Sciences

Professor Henry Jabbour
School of Clinical Sciences & Community Health

Professor Robert Mills
School of Clinical Sciences & Community Health

Professor Charles Swainson
School of Clinical Sciences & Community Health

Professor Clifford Lean
School of Molecular & Clinical Medicine

College of Science & Engineering

Personal Chairs

Professor Polly Arnold
Personal Chair of Synthetic Inorganic Chemistry

Professor Gabi Hegerl
Personal Chair of Climate System Science

Professor Andrew Curtis
Personal Chair of Mathematic Geoscience

Professor David Ingram
Personal Chair of Computational Fluid Dynamics

Professor Thomas Stevenson
Personal Chair of Microelectronics Technology

Professor Noel Smyth
Personal Chair of Nonlinear Waves

Professor Loeske Kruuk
Personal Chair of Evolutionary Ecology

Professor Lea Harrington
Personal Chair of Telomere Biology

Professor Jane Alexandra Rowe
Personal Chair of Molecular Medicine

Professorships

Professor Jonathan Robert Gibbins
Chair of Power Plant Engineering and Carbon Capture

Professor Peter Anthony Tasker
Chair of Industrial Chemistry

Senior Honorary Professorships

Professor Lindsay Sawyer
School of Biological Sciences

Professor Michael Forde
School of Engineering

Professor Peter Grant
School of Engineering

Professor Peter Furley
School of GeoSciences

Professor Alastair Gillespie
School of Mathematics

Honorary Professors

Professor Philippe Toint
School of Mathematics

Appendix 1

Undergraduate applications and acceptances

2003 year of entry	Men	Women	Total
Applications*	14,578	17,869	**32,447**
Places taken up	1,836	2,344	**4,180**

2004 year of entry	Men	Women	Total
Applications*	16,692	20,386	**37,078**
Places taken up	1,908	2,439	**4,347**

2005 year of entry	Men	Women	Total
Applications*	18,767	22,959	**41,726**
Places taken up	2,043	2,477	**4,520**

2006 year of entry	Men	Women	Total
Applications*	20,578	24,636	**45,214**
Places taken up	1,842	2,319	**4,161**

2007 year of entry	Men	Women	Total
Applications*	22,174	26,609	**48,783**
Places taken up	1,936	2,442	**4,378**

2008 year of entry**	Men	Women	Total
Applications*	21,193	24,462	**45,655**
Places taken up	2,221	2,618	**4,839**

2009 year of entry**	Men	Women	Total
Applications*	22,523	25,299	**47,822**
Places taken up	2,479	2,870	**5,349**

2010 year of entry**	Men	Women	Total
Applications*	21,601	25,657	**47,258**
Places taken up	1,631	2,190	**3,821**

* Figures defined as number of applications received in each cycle for entry in the same year or deferred entry the following year.
** UCAS reduced the number of applications per applicant from six to five from the 2008 entry cycle.

Appendix 2

Student numbers

Headcount by level of study and gender

	Undergraduate	Taught Postgraduate	Research Postgraduate	Total
Female	11,001	2,879	1,899	15,779
Male	8,526	2,100	1,989	12,615
Total	**19,527**	**4,979**	**3,888**	**28,394**

Headcount by College

	2009/2010
Humanities & Social Science	16,506
Medicine & Veterinary Medicine	3,810
Science & Engineering	8,078
Total	**28,394**

Headcount by domicile region on entry

	2009/2010
Scotland	12,341
England	6,798
EU (non-UK)	3,121
Outwith EU	5,339
Northern Ireland	510
Wales	179
Channel Islands and Isle of Man	105

Top 10 non-UK domicile on entry

	2009/2010
United States of America	**1,695**
China (People's Republic)	**799**
Germany	**423**
Greece	**405**
Ireland	**359**
Canada	**323**
France	**277**
Poland	**223**
Malaysia	**216**
India	**200**

Top 10 non-EU domicile on entry

	2009/2010
United States of America	**1,695**
China (People's Republic)	**799**
Canada	**323**
Malaysia	**216**
India	**200**
Hong Kong	**147**
Taiwan	**141**
Norway	**140**
Singapore	**123**
Japan	**103**

Top 10 EU domicile on entry

	2009/2010
Germany	**423**
Ireland (Republic of)	**405**
Greece	**359**
France	**277**
Poland	**223**
Italy	**195**
Spain	**142**
Bulgaria	**124**
The Netherlands	**116**
Sweden	**114**

Appendix 3

Benefactions (this reflects giving from 1 August 2009 to 31 July 2010)

£1,000–£4,999

A Sinclair Henderson Trust
Mr Brian Adair
Dr Alistair Adams
Mrs Linda Adams
Mr John Balfour Allan
Analog Devices Limited
Mrs Cynthia Atkinson
Dr Alfred & Dr Isabel Bader
Baldoukie Trust
Barclays Capital
Mr Peter Beaumont
Mr David P Bendix
Dr Alastair Berry
Professor Rajinder S Bhopal CBE
Dr Gordon Biggar
Dr Stuart Blackie
Mrs Ann Bloy
Mr Stephen & Mrs Stephanie Bourne
BP
Mrs Gillian Brewis
Mr Derek Brock
Mrs Jann Brown
Mr Robert Brown
Mrs Ann Burleigh
Burns Supper Charity Event
Mr Gordon Campbell
Miss Helen Campbell
Mr Thomas Campbell
Professor John W Cassels FRS FRSE
Chief Executives Organization
Church of Scotland
Dr Marianna Clark
Mr John Clement
Comune di Udine
Mr Douglas A Connell
Mr James Courtenay-Evans
Cummins Generator Technologies
Dr Simon Cunningham
Dr Anna Daiches
Vice-Principal Young P Dawkins & Mrs Ruth Dawkins
Mrs Almira Delibegovic-Broome
Mrs Joyce Denny
Dialog Semiconductor
Mr Adam Dixon
Mr Nicholas Donofrio
Dziniak Charitable Trust for Animals
Mr Dugald Eadie
Edinburgh University Trading & Investment Club
Mrs Liesl Elder
Professor Leonard J Evenden
Mr Allan Farquharson
Mr Simon Fennell
Dr Roualeyn Fenton-May
Ms Valerie Fitch
Mr Raoul Fraser
Mr Peter B Freshwater
Ms Marlene H Gilchrist
Goldman Sachs & Co
Mr Morton Gould
Mr Murray & Mrs Anne Grant
Mr Alan Gray
Greater Los Angeles Zoo Association
Grunenthal Ltd
Dr Mary Hall
Dr Graham Hamilton
Dr Roy Harris OBE
Dr Erik Hauge
Mrs Dorothy Hendery
The Henry Drucker Fund
Mr Alan Herd
Mr Mika Herold
Mrs Hilda Beer Charitable Trust
Professor William Hill OBE FRS FRSE
Dr Gwo-Tzer Ho
Mr James Hunter
Mr Wilfred S Hutchings
Italian Institute of Culture
Jeremy Gardner Associates
Dr Michael Jesudason
Dr Sigurd Johnsen
Dr John Johnson MBE
Mr Gregory Jordan
Dr Michael Langdon
Sir Robert Langlands FRSE Hon FMedSci
Mr Alexander Leslie
Lindsays' Charitable Trust
Mr John N Lloyd
London Reels
Dr Alexander MacGregor
Mr W K Maciver CBE & Mrs Virginia Maciver
Dr John & Dr Judith Mackay
Manchester Edinburgh University Club
Mr Ross Marshall
Mr Gordon F Matthew
Mr David A McCorquodale
Mr David & Mrs Morag McIntyre
Sir Ian McKellen
Mr John D McNeil
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Appendix 4

Research grants and other sources of funding

1. From charities, industry and other institutions

Sponsor type	Sponsor name	Project total £'000
UK – Charity	Academy of Medical Sciences	58
UK – Charity	Action Medical Research	136
UK – Charity	Alzheimer's Research Trust	64
UK – Charity	Alzheimer's Society	186
UK – Charity	anonymous donor	36
UK – Charity	Arthritis Research Campaign	724
UK – Charity	ASH Scotland	51
UK – Charity	Association for International Cancer Research	158
UK – Charity	Autistica	65
UK – Charity	Blue Moon Foundation	25
UK – Charity	Breast Cancer Campaign	197
UK – Charity	British Geriatrics Society	2
UK – Charity	British Heart Foundation	2,696
UK – Charity	British Journal of Anaesthesia	5
UK – Charity	Caledonian Research Foundation	168
UK – Charity	Cancer Research UK	8,021
UK – Charity	Carnegie Trust for the Universities of Scotland	84
UK – Charity	Chest, Heart and Stroke Scotland	87
UK – Charity	Colt Foundation	60
UK – Charity	Cunningham Trust	83
UK – Charity	Cystic Fibrosis Trust	3,648
UK – Charity	Darwin Trust	180
UK – Charity	Diabetes UK	177
UK – Charity	Edinburgh Beltane	6
UK – Charity	Edinburgh, Lothians, Fife and Borders Regional Articulation Hub	23
UK – Charity	Equality and Human Rights Commission (Scotland)	26
UK – Charity	Fergus Maclay Leukaemia Trust	33
UK – Charity	Great Britain Sasakawa Foundation	3
UK – Charity	Groundbreakers	2
UK – Charity	Jules Thorn Charitable Trust	392
UK – Charity	Kennel Club Charitable Trust	100
UK – Charity	Kibble Education and Care Centre	15
UK – Charity	Leukaemia Research Fund	119
UK – Charity	Leukemia Research Foundation	230
UK – Charity	Leverhulme Trust	1,214
UK – Charity	London Mathematical Society	2
UK – Charity	Mason Medical Research Foundation	6
UK – Charity	Medical Research Council Technology	231
UK – Charity	Medical Research Scotland	413
UK – Charity	Melville Trust	114
UK – Charity	Motor Neurone Disease Association	922
UK – Charity	Mpingo Conservation Project	121
UK – Charity	Multiple Sclerosis Society	49
UK – Charity	National Trust for Scotland	7
UK – Charity	Nuffield Foundation	486
UK – Charity	Paul Mellon Centre for Studies in British Art	30
UK – Charity	Peel Medical Research Trust	2
UK – Charity	People's Trust for Endangered Species	8
UK – Charity	Pet Plan Charitable Trust	99
UK – Charity	R S Macdonald Charitable Trust	27
UK – Charity	Rett Syndrome Research Foundation	31
UK – Charity	Roslin Foundation Ltd	555
UK – Charity	Scottish Motor Neurone Disease Association	271
UK – Charity	Society for Endocrinology	13
UK – Charity	Society for General Microbiology	3
UK – Charity	Society of Antiquaries	1
UK – Charity	Spalding Trust	3
UK – Charity	Stroke Association	105
UK – Charity	Tenovus – Scotland	20
UK – Charity	The Volant Charitable Trust	125
UK – Charity	Tommy's Campaign	320
UK – Charity	Wellcome Trust	16,173
EU – Industry	Bayer Bioscience NV	24
EU – Industry	DoCoMo Communications Laboratories Europe GMBH	106
EU – Industry	Eidgenssische Materialprfungs – und Forschungsanstalt (EMPA)	10
EU – Industry	Electricite de France	72
EU – Industry	Fundacio La Marato de TV3	37
EU – Industry	Lilly SA	26
EU – Industry	Lohmann Tierzucht GmbH	18
EU – Industry	Michelin	46
EU – Other	Alliance BioSecure Foundation	61
EU – Other	European Molecular Biology Organisation	35
EU – Other	European Organisation for Research and Treatment of Cancer	369
EU – Other	European Science Foundation	91
EU – Other	Fondazione Mondo Digitale	187
EU – Other	Human Frontier Science Program Organization	102
EU – Other	Nordic Council	8
UK – Industry	AEA Technology plc	108
UK – Industry	Agilent	40
UK – Industry	anonymous donor	267
UK – Industry	Aqua Marine Power Ltd	21
UK – Industry	AstraZeneca	47
UK – Industry	Aviagen	16
UK – Industry	Ayrshire Power Limited	15
UK – Industry	BG International Ltd	15
UK – Industry	Bioscience Network Limited	6
UK – Industry	Bord Na Gaidhlig	3
UK – Industry	BP	24
UK – Industry	Building Research Establishment	150
UK – Industry	Cambridge Crystallographic Data Centre	30
UK – Industry	Chiesi Ltd	5
UK – Industry	ConocoPhillips	15
UK – Industry	Cyntellect Europe Ltd	42
UK – Industry	Cytec Industries UK Ltd	36
UK – Industry	Daxtra Technologies Ltd	43
UK – Industry	DEM Solutions Ltd	22
UK – Industry	Doosan Babcock Energy	20
UK – Industry	Dovecot Studios	4
UK – Industry	EADS Astrium Ltd	81
UK – Industry	Energy Technologies Institute	1,627
UK – Industry	First Oil Expro Limited	67
UK – Industry	FM Global	34
UK – Industry	Format International Ltd	15
UK – Industry	Genesis Faraday Partnership	90
UK – Industry	Glycomar Ltd	30
UK – Industry	Ice Robotics Ltd	12
UK – Industry	Ilika Technologies Ltd	54
UK – Industry	Infineum UK Ltd	102
UK – Industry	International Paint Ltd	18
UK – Industry	Lloyds-TSB	2,000
UK – Industry	Macom Technologies Ltd	73
UK – Industry	Maersk Oil North Sea UK Limited	9
UK – Industry	Micromass UK Ltd	16

UK – Industry	National Grid	15
UK – Industry	Nexen Petroleum UK Ltd	35
UK – Industry	Ove Arup	68
UK – Industry	Petroleum Geo-Services ASA	967
UK – Industry	Pfizer Ltd	759
UK – Industry	RoslinCellab	6
UK – Industry	RWE npower	15
UK – Industry	Schlumberger Excellence in Educational Development	37
UK – Industry	Scottish and Southern Energy PLC	15
UK – Industry	Scottish Glass Studios	12
UK – Industry	Scottish National Blood Transfusion Service	20
UK – Industry	Scottish Power	81
UK – Industry	Selex Ltd	238
UK – Industry	Senergy	15
UK – Industry	Shasun Pharma Solutions Ltd	3
UK – Industry	Shell Research Limited	304
UK – Industry	Silberline Limited	18
UK – Industry	STMicroelectronics	9
UK – Industry	The Crown Estate	15
UK – Industry	TMRI Limited	147
UK – Industry	Touch EMAS Ltd	15
UK – Industry	UCB Celltech	48
UK – Industry	Wood Mackenzie Ltd	15
Learned Society	British Academy	986
Learned Society	British Society for Paediatric Endocrinology and Diabetes	14
Learned Society	European Calcified Tissue Society	173
Learned Society	Royal Academy of Engineering	117
Learned Society	Royal College of Physicians and Surgeons of Glasgow	5
Learned Society	Royal College of Surgeons Edinburgh	57
Learned Society	Royal College of Veterinary Surgeons Trust	23
Learned Society	Royal Society	3,402
Learned Society	The Royal Society of Edinburgh	1,312
Overseas – Charities	American Asthma Foundation	455
Overseas – Charities	Bill and Melinda Gates Foundation	896
Overseas – Charities	Broad Institute	125
Overseas – Charities	Henry Ford Health System	74
Overseas – Charities	National Humanities Center	25
Overseas – Charities	Seattle Biomedical Research Institute	27
Overseas – Charities	The Andrew Mellon Foundation	94
Overseas – Charities	World Health Organization	67
Overseas – Government	National Institutes of Health	64
Overseas – Government	Office of Naval Research	633
Overseas – Industry	BBN Corporation	183
Overseas – Industry	Cobb-Vantress Inc	16
Overseas – Industry	Hewlett-Packard Company	44
Overseas – Industry	Mitsubishi Tanabe Pharma Corporation	126
Overseas – Industry	Stryker International	1,057
Overseas – Industry	Taligen Therapeutics	46
Overseas – Industry	Unhwa Biotech	80
Overseas – Other	Cold Spring Harbor Laboratory	8
Overseas – Other	Japan Foundation Endowment Committee	3
Overseas – Other	Kansas Geological Survey	3
Overseas – Other	National Institute of Animal Health	51
Overseas – Other	NEON (National Ecological Observatory Network)	32
Overseas – Other	The John Carter Brown Library	25
Overseas – Other	The Order of Malta, France	29
Overseas – Universities etc	Asian Institute of Technology	10
Overseas – Universities etc	Agencia de Gresti d Ajuts Universitaris i de Recerca	5
Overseas – Universities etc	Fairbank Center for Chinese Studies	28
Overseas – Universities etc	International Architecture Biennale Rotterdam	19
Overseas – Universities etc	Ohio State University Research Foundation	37
Overseas – Universities etc	Princeton University	62
Overseas – Universities etc	Stockholm University	21
Overseas – Universities etc	University of Georgia	31
Overseas – Universities etc	University of Helsinki	26
Overseas – Universities etc	University of Montreal	11
Overseas – Universities etc	University of Otago	27
Overseas – Universities etc	University of Pennsylvania	108
Total from charities, industry and other institutions £'000		**59,054**

2. From research councils and other government agencies

Sponsor type	Sponsor name	Project total £'000
UK – Research Council	Arts and Humanities Research Council	1,565
UK – Research Council	Biotechnology and Biological Sciences Research Council	22,414
UK – Research Council	Economic and Social Research Council	5,803
UK – Research Council	Engineering and Physical Sciences Research Council	23,673
UK – Research Council	Medical Research Council	23,668
UK – Research Council	Natural Environment Research Council	6,070
UK – Research Council	Science and Technology Facilities Council	9,706
EU – Government	European Commission	28,177
UK – Government	British Council	75
UK – Government	British Geological Survey	159
UK – Government	Centre for Ecology and Hydrology	85
UK – Government	Chief Scientist Office – Scotland	4,445
UK – Government	Department for Environment, Food and Rural Affairs	2,465
UK – Government	Department of Health	14
UK – Government	Electro Magnetic Remote Sensing Defence Technology Centre	356
UK – Government	Forestry Commission	61
UK – Government	Health Service Research Unit	65
UK – Government	Joint Information Systems Committee	3,508
UK – Government	Knowledge Transfer Partnership	151
UK – Government	Learning and Teaching Scotland	4
UK – Government	Living with Environmental Change	4
UK – Government	NESTA Policy and Research Unit	5
UK – Government	Research Information Network	18
UK – Government	Scottish Enterprise	1,579
UK – Government	Scottish Funding Council	1,609
UK – Government	Scottish Government	2,070
UK – Government	Scottish Water	153
UK – Government	Technology Strategy Board	398
UK – Health Authorities	Bradford Teaching Hospital	20
UK – Health Authorities	Greater Glasgow NHS Board	52
UK – Health Authorities	Lothian Health Board	221
UK – Health Authorities	National Institute for Health Research	4,248
UK – Health Authorities	NHS Blood and Transplant	162
UK – Health Authorities	NHS Connecting for Health Evaluation Programme	90
UK – Health Authorities	NHS Education for Scotland	7
UK – Health Authorities	NHS Grampian	1

Appendix 4

(continued)

UK – Health Authorities	NHS Lothian	105
UK – Health Authorities	NHS R and D	508
UK – Health Authorities	NHS Scotland	37
UK – Universities etc	Cranfield University	115
UK – Universities etc	Edinburgh Napier University	6
UK – Universities etc	Glasgow Caledonian University	70
UK – Universities etc	Heriot-Watt University	111
UK – Universities etc	Imperial College	1,126
UK – Universities etc	Inverness College	10
UK – Universities etc	King's College London	19
UK – Universities etc	Leeds University	187
UK – Universities etc	Motherwell College	55
UK – Universities etc	Nottingham University	320
UK – Universities etc	Open University	9
UK – Universities etc	Scottish Agricultural College	25
UK – Universities etc	University College London	10
UK – Universities etc	University of Aberdeen	7
UK – Universities etc	University of Abertay	279
UK – Universities etc	University of Bath	6
UK – Universities etc	University of Birmingham	42
UK – Universities etc	University of Cambridge	208
UK – Universities etc	University of Canterbury	35
UK – Universities etc	University of Cardiff	138
UK – Universities etc	University of Dundee	505
UK – Universities etc	University of Durham	35
UK – Universities etc	University of Exeter	5
UK – Universities etc	University of Glasgow	91
UK – Universities etc	University of Kent	7
UK – Universities etc	University of Loughborough	756
UK – Universities etc	University of Manchester	398
UK – Universities etc	University of Newcastle	164
UK – Universities etc	University of Reading	448
UK – Universities etc	University of Sheffield	34
UK – Universities etc	University of Southampton	258
UK – Universities etc	University of St Andrews	47
UK – Universities etc	University of Stirling	12
UK – Universities etc	University of the West of Scotland	18
UK – Universities etc	University of York	67

Total from research councils and other government agencies £'000 **149,374**

Grand total £'000 208,428

Note: The above list sets out the total project value of research grants funded from these sponsors. The sponsor will have contributed this whole amount, with the exception of some governmental sources (including research councils) and charitable sources, who fund the majority, with the balance being received indirectly via the Scottish Funding Council.

Festival fever takes over Old College quad as the stage is set for an evening performance of Shakespeare's *Macbeth*.

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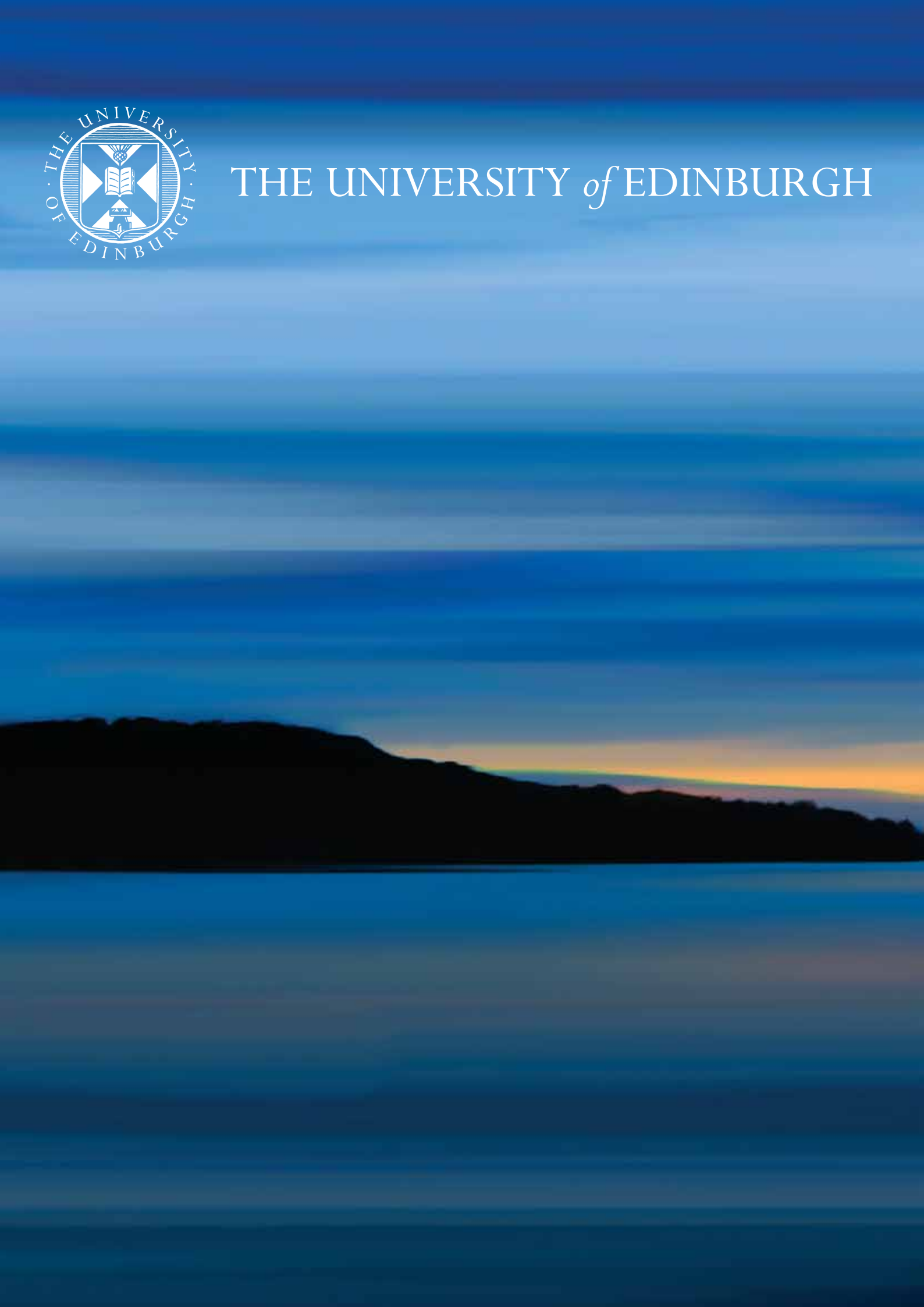
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